SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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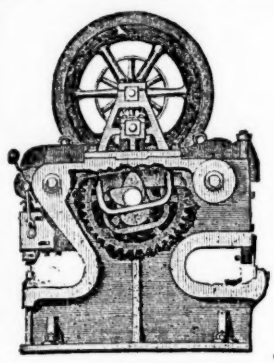

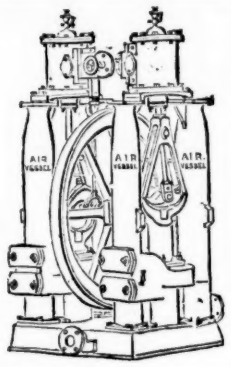

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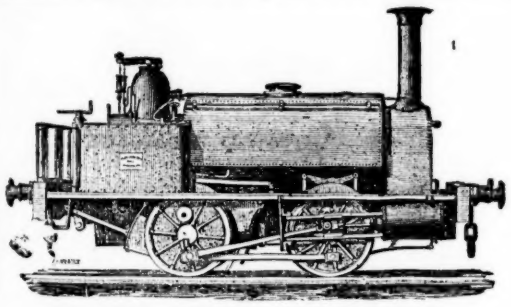
MAKER OF
STEAM PUMPS, PORTABLE ENGINES, PLATE BENDING ROLLERS BAR AND ANGLE IRON SHEARS, PUNCHING AND SHEARING MACHINES, PATENTEE OF THE DOUBLE CAM LEVER PUNCHING MACHINE, BAR SHEARS, AND RAIL PUNCHING MACHINES,
EGERTON STREET IRON WORKS,
HULME, MANCHESTER.



TANK LOCOMOTIVES,
FOR SALE OR HIRE.
HENRY HUGHES AND CO.
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BICKFORD, SMITH, AND CO., of TUCKINGMILL, CORNWALL; ADELPHI BANK CHAMBERS, SOUTH JOHN-STREET, LIVERPOOL; and 85, GRACECHURCH-STREET, LONDON, E.C., MANUFACTURERS AND ORIGINAL PATENTEES of SAFETY-FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—

EVERY COIL of FUSE MANUFACTURED by them has TWO SEPARATE THREADS PASSING THROUGH the COLUMN of GUNPOWDER, and BICKFORD, SMITH, AND CO. CLAIM TWO SUCH SEPARATE THREADS as THEIR TRADE MARK.

For Excellence and Practical Success of Engines — Represented by Model exhibited by this Firm.

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HAYLE FOUNDRY WHARF, NINE ELMS, LONDON,
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MANUFACTURERS OF
PUMPING and other LAND ENGINES and MARINE STEAM ENGINES the largest kind in use, SUGAR MACHINERY, MILLWORK, MINING MACHINERY, and MACHINERY IN GENERAL.
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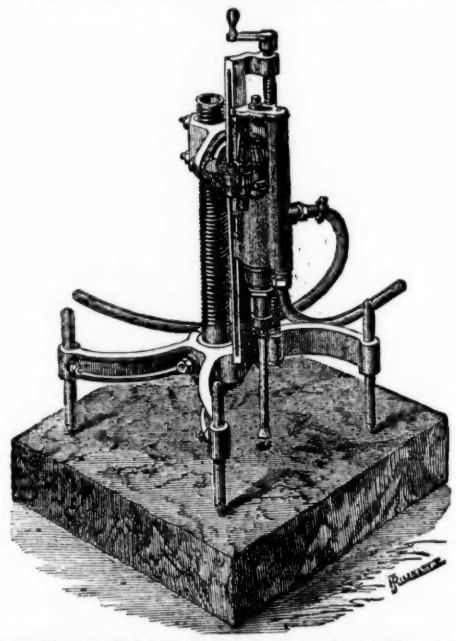

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BLASTING FUSE FOR MINING AND ENGINEERING PURPOSES,
Suitable for wet or dry ground, and effective in Tropical or Polar Climates.

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Price Lists and Sample Cards may be had on application at the above address.
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STEMMERS, PRICKERS, CHARGERS, AND SCRAPERS,
Which have been tried and found to answer the purpose, are
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FOR MAIN LINE TRAFFIC, SHORT LINES, COLLIERIES, CONTRACTORS, IRONWORKS, MANUFACTORIES, &c., from a superior specification, equal to their first-class Railway Engines, and specially adapted to sharpcurves and heavy gradients, may always be had at a short notice from—
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ESTABLISHED 1847.
OLDBURY WORKS, NEAR BIRMINGHAM.
MANUFACTURERS of RAILWAY CARRIAGES and WAGONS, and EVERY DESCRIPTION of IRONWORK.
Passenger carriages and wagons built, either for cash or for payment, over a period of years.
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THE BIRMINGHAM WAGON COMPANY (LIMITED) MANUFACTURE RAILWAY WAGONS of EVERY DESCRIPTION, for HIRE and SALE, by immediate or deferred payments. They have also wagons for hire capable of carrying 6, 8, and 10 tons, part of which are constructed specially for shipping purposes. Wagons in working order maintained by contract.
EDMUND FOWLER, Sec.
WAGON WORKS,—SMETHWICK, BIRMINGHAM.
*** Loans received on Debenture; particulars on application.

GREENER AND ELLIS' IMPROVED FETTLING FOR PUDDLING FURNACES is now in active operation at the SKERNE IRONWORKS, DARLINGTON, and LICENSES may be had for USING the PATENT on application to T. GREENER, STATION STREET, DARLINGTON.
The improved yield and quality of iron produced, and the economy effected by the process, render its speedy universal adoption, in these times, a matter of necessity and certainty.—Darlington, January, 1874.

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PITWOOD MERCHANTS,
PENNER WHARF, NEWPORT, MONMOUTHSHIRE
AGENTS AT SWANSEA:—
STEPHEN AND REES, SAW MILLS, GREENFIELD STREET.
Importers of every description of wood for colliery purposes.

THE PATENT SELF-ACTING MINERAL DRESSING MACHINE COMPANY (LIMITED).
T. CURRIE GREGORY, C.E., F.G.S.
OFFICES,—62, ST. VINCENT STREET, GLASGOW.
IMPORTANT NOTICE TO MINE PROPRIETORS.
This company grant licenses, under their patents, for the use, singly or in combination, of the most approved machinery for dressing ores, comprising Stamps, Jiggers, Classifiers, and Buddles.

MR. GEORGE GREEN, Mechanical Engineer to the above Company, SUPPLIES MACHINES under the above Company's Patents for DRESSING all METALLIC ORES. Dressing floors having these Machines possess the following advantages:—
1.—They are cheaper than any other kind in first outlay.
2.—From 60 to 70 per cent. of the labour is saved.
3.—Only about one-fourth of the space usually occupied by dressing-floors is required.
4.—The ore is made clean at one operation, and 5 per cent. of ores otherwise lost is saved.
Drawings, specifications, and estimates will be forwarded on application to—
GEORGE GREEN, M.E., ABERYSTWITH, SOUTH WALES.

EXTRACTS FROM TESTIMONIALS RECEIVED:—

Mr. C. E. BAINBRIDGE, of the London Company's Mines, Middleton-in-Teesdale, by Darlington, writing on the 27th September, 1873, says—"After a full season's experience of the very complete Dressing Machine erected by you at our Colberry Mines, we are fully satisfied with our decision to adopt your patents in preference to all others. The machinery does its work as well as we can desire, and better than we anticipated. We are now getting through 70 tons of orestuff per day, of rich quality. Without your machinery we should have been at a standstill, for we cannot get hands to supply our wants elsewhere. It saves fully one-half of the old wages, and vastly more on the wages we now give, and the saving in ore is not much short of 10 per cent. You can quote from this letter as you think proper."

Mr. COULTAS DODSWORTH, of Haydon Bridge, writes, on the 15th January, 1874:—"I have just returned from the Stonecroft and Greyside Mines, where I have seen your 'Patent Ore Dressing Machinery' at work, with which, I must say, I was highly pleased. It is decidedly the best machinery I have ever seen for the purpose, the results being as near perfection as possible, and I am quite sure its use in this case will be a very great saving to the company. No large mining establishment should be without your machinery, especially when labour is difficult to procure—a mere fraction of the hands being only required as against the old system, and the work altogether much better done, and a great saving of ore effected. I have heard it said that your machinery is better adapted for poor than for rich ores, but from what I have seen to-day I am quite confident it will do for any kind of ores. I beg not only to congratulate, but also to compliment, you on the great success of your 'Patent Ore Dressing Machinery.' You may use this letter as you think proper."

Mr. MONTAGUE BEALE, Managing Director of the Cagliara Mining Company (Limited), says, on May 15th, 1873:—"I have much pleasure in speaking of the great efficiency of your 'Patent Dressing Machinery,' as erected by you at our mines at Rosas, in the Island of Sardinia. You will remember it has always been considered impossible to dress, or rather separate, the minerals our ores contain by machinery, but our captain assures me he gets a constant return of 76 per cent. of lead with the greatest ease, and I know by the returns we are realising the best market price. I consider this company is much indebted to you for the success you have achieved at so small cost. It may interest you to know, from my experience in several of the British possessions, including the whole of the Australian Colonies, that my opinion is I have never seen any dressing machinery that can efficiently, and at so small a cost, dress, and separate metallic ores, however close the mechanical mixture may be, as yours. You can use this letter in any way you like."

The most satisfactory testimonials also have been received from the GREENSIDE MINE COMPANY, Westmoreland; the TALARGOCH MINING COMPANY, North Wales, and others. Copies of these may be had from MR. GREEN.

CHARLES BALL AND CO.,

21, NEW BRIDGE STREET, BLACKFRIARS, LONDON.

ROCK DRILLS.

DIFFERENT SYSTEMS.

THE ANTI-CONCUSSION DRILL.—This machine is specially adapted for driving levels, adits, or tunnels. It works without concussion, and therefore does not wear out. Has driven as much as 53 yards of drift in one month, where hand labour could only progress 8 yards in the same time. Forty-four of these machines are at work in a single colliery. Price £105.

THE EXCELSIOR.—This machine is the latest out; it is self-acting, self-feeding, self-stopping. It has fewer parts than any other drills, and its simplicity is remarkable. It is specially adapted for sinking and vertical work. Price £85.

THE QUARRIER.—Self-acting and self-feeding, very light and handy, suited for general work, and for quarry work, especially on account of its very small dimensions and lightness. Price £60 to £80.

THE HAND DRILL—Hand drill for soft material. Price £20 to £24.

DRILLS of other systems are also in stock, and can be supplied, if desired.

Each of these Drills is a different Patent, constructed on a separate and distinct principle.

REGISTERED TRADE MARK.

AIR COMPRESSORS.

DRY SYSTEM.—Cheap and simple—six sizes.

WET SYSTEM.—This plan of compressing air is so perfect that the volume of the air compressed is equal to 96 per cent. of the volume of the cylinders. It is recommended whenever the work is of a permanent nature, or likely to be protracted. Driven by steam direct—nine sizes. By water power or straps—six sizes.

BOILERS.

SMALL BOILERS, for working Rock Drills, from 4 to 12-horse power generally in stock,

ANY LARGER SIZE TO ORDER.

PUMPS, STONE BREAKERS, WINDING ENGINES, &c.

Messrs. CHARLES BALL and Co., in consequence of their long experience in Rock Drilling, both in England and on the Continent, are prepared to advise professionally as to the best methods for driving and sinking according to nature of rock and local circumstances.

Should other ROCK DRILLS or MINING MACHINERY be successfully brought out by practical Engineers, Messrs. C. BALL and Co. are prepared, after having had the invention thoroughly tested, to enter into arrangements with the Inventors for the INTRODUCTION of such MACHINES in this Country and Abroad.

Progress obtained by CHARLES BALL and Co.'s DRILLS at the Collieries of Ronchamp:—

By hand - - - - - - - - - - - 8 yards per month.
By Charles Ball and Co.'s Machines - - - - 53 yards per month, or 6½ times as fast.

SOLE AGENT FOR

GILLOTT AND COPLEY'S PATENT ROTARY COAL-CUTTING MACHINE,
LAUTH'S PATENT THREE HIGH ROLLS FOR SHEETS AND PLATES.

I. G. BASS, THE MACHINERY REGISTER OFFICE, BOW STREET, SHEFFIELD,
WHO WILL FORWARD PROSPECTUSES.
ENGINES, SQUEEZERS, &c., SPECIALLY DESIGNED FOR DANKS' PUDDLING FURNACES.

MINERS' LAMP AND GAUZE MANUFACTORY,

Established Half-a-century.

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MADE to DRAWING, DESCRIPTION, or MODEL. Illustrated Price Lists free, by post or otherwise.
VALUABLE TESTIMONIALS FROM EMINENT FIRMS.
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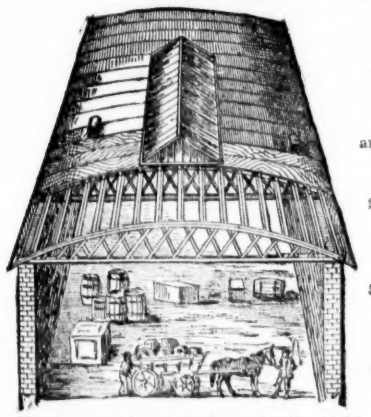
M'TEAR AND CO.'S CIRCULAR ROOFING FELT,



FOR
GREAT ECONOMY
AND
CLEAR WIDE SPACE.

For particulars, estimates, and plans, address,—
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54, PORTLAND STREET,
MANCHESTER;
OR
CORPORATION STREET,
BELFAST.

The above drawing shows the construction of this cheap and handsome roof, now much used for covering factories, stores, sheds farm buildings, &c., the principal of which are double bow and string girders of best pine timber, sheeted with ½ in. boards, supported on the girders by purlins running longitudinally, the whole being covered with patent waterproof roofing felt. These roofs so combine lightness with strength that they can be constructed up to 100 ft. span without centre supports, thus not only affording a clear wide space, but effecting a great saving both in the cost of roof and uprights.

They can be made with or without top-lights, ventilators, &c. Felt roofs of any description executed in accordance with plans. Prices for plain roofs from 30s. to 60s. per square, according to span, size, and situation.

Manufacturers of PATENT FELTED SHEATHING, for covering ships' bottoms under copper or zinc.

INODOROUS FELT for lining damp walls and under floor cloths.

DRY HAIR FELT, for deadening sound and for covering steam pipes, thereby saving 25 per cent. in fuel by preventing the radiation of heat.

PATENT ASPHALTE ROOFING FELT, price 1d. per square foot.

Wholesale buyers and exporters allowed liberal discounts.

PATENT ROOFING VARNISH, in boxes from 3 gallons to any quantity required 8d. per gallon.

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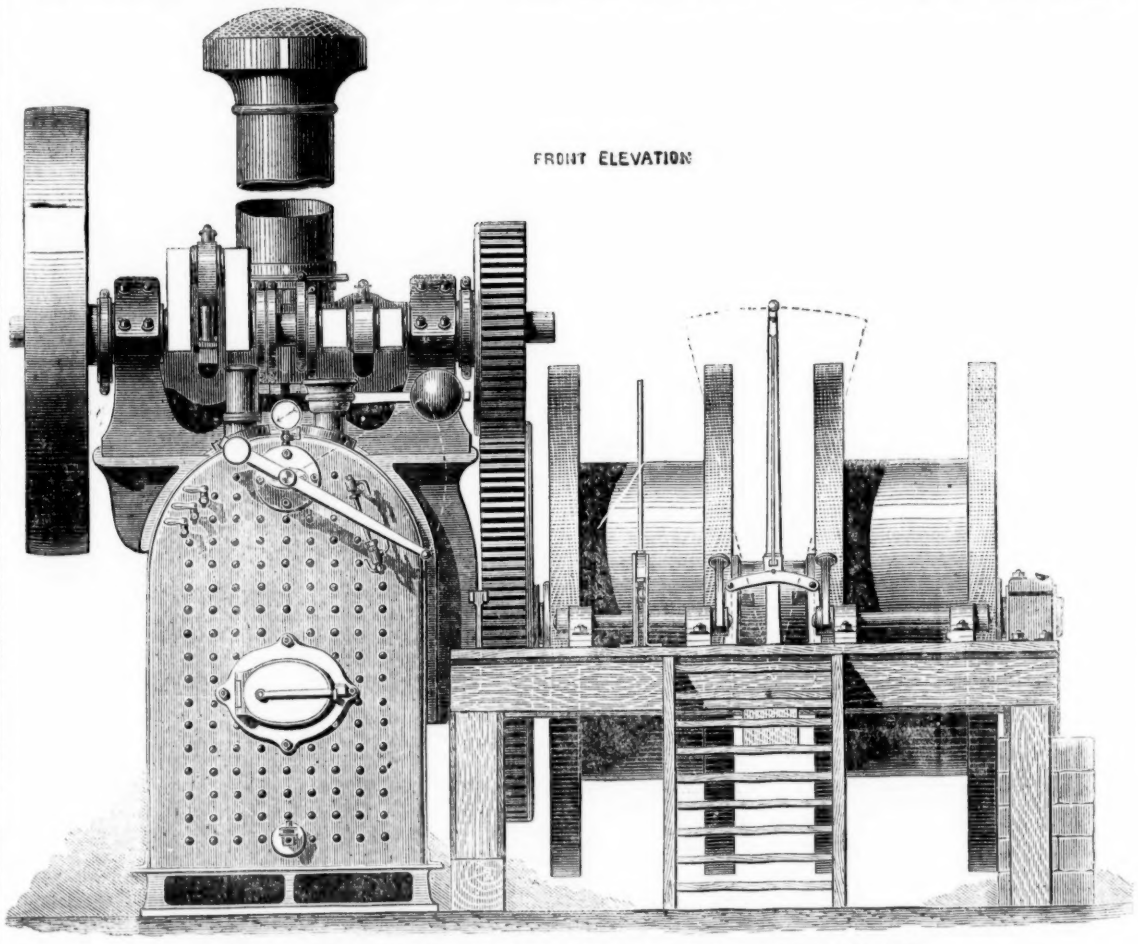
RAILWAY SPRING COMPANY,
MILLSANDS, SHEFFIELD,
MANUFACTURERS OF EVERY DESCRIPTION OF
RAILWAY SPRINGS.

THE IRON AND COAL TRADES' REVIEW:
ROYAL EXCHANGE, MIDDLESBOROUGH.
The IRON AND COAL TRADES' REVIEW is extensively circulated amongst the Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron and coal districts. It is, therefore, one of the leading organs for advertising every description of Iron Manufactures, Machinery, New Inventions, and all matters relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.
Offices of the Review: Middlesborough-on-Tees (Royal Exchange); London 11 and 12, Red Lion-court, Fleet street; Newcastle-on-Tyne (50, Grey-street)

THE ROBEY MINING ENGINE.



FROM 20 TO 200 EFFECTIVE HORSE-POWER.
FOR FULL PARTICULARS AND PRICES, APPLY TO—

ROBEY AND COMPANY, LIMITED,
PERSEVERANCE IRONWORKS, LINCOLN.

ALSO OF PATENT PORTABLE

HAULING & WINDING ENGINE

WITH
PATENT DRUM WINDLASSES,
FOR MINING PURPOSES.

This Engine is specially commended to Mining Engineers and others, as by its adoption—
Haulage along inclined drifts is easily and cheaply effected;
The expense of sinking new shafts is greatly reduced, neither foundations nor engine-house being required
It is available not only for winding, but for pumping, sawing, &c.—a great desideratum at a large colliery;
It can be very quickly removed (being self-propelling), and fixed in any desired position.
Prices and full particulars on application as above, and also references to view the engine in successful work near Derby Carnarvon, Haverfordwest, Darlington, Durham, Penzance, and other places.

THESE ENGINES WORK WITH MARVELLOUS ECONOMY IN FUEL.

Original Correspondence.

MINERAL WEALTH OF QUEENSLAND.

SIR,—The news to hand of the extent and richness of the great northern gold field of Queensland—the Palmer—confirms all previous reports, and preparations are making by the gold-digging population to start for this find in March and April next.

The tin ore received at the Warwick Railway terminus for the month of November was 529 tons 18 cwts. 2 qrs. 19 lbs. Owing to the continued drought a large quantity of tin ore found its way to Sydney, *via* Newcastle, &c. The amount is variously estimated, but may safely be put down at as much more for the month. The wet weather having since set in, all the tin ore must again be forwarded *via* Warwick. During the month a large number of men have left the tin fields ostensibly for the Palmer, and a large number of Chinese have arrived from the North and elsewhere. In my next I shall be able to give you the year's exports of tin and copper, so as to set at rest the question of Australian productions.

RESIDENT.

THAMES GOLD FIELDS, NEW ZEALAND.

SIR,—The Waiokoromeka section of the Thames Gold Fields is comparatively unknown; it strikes from the main range of the peninsula northerly, and may fairly be said to be a continuation of the Tokatea slope on the Kinnday's Bay side of the range. The formation and composition of the strata is identical with the Tokatea Mine. This portion of the gold field, some five years ago, was the most favoured by the prospectors, who traced gold up to the Waiokoromeka Creek to the present place of operations and lost the run of it. In this creek specimens of quartz and gold, almost pure, of many pounds weight were found, which prompted further prospecting, and after years of privation the prospectors came on an auriferous deposit which yielded handsomely for some time, but was soon cut out. Since then another party of prospectors tried their luck on the same creek, and were about to give up in despair, after about two years searching, when, fortunately, they decided to sink an old trench a little deeper. There they found the lode which has to this date been opened on about 600 feet, and it shows to be well-defined, with gold regularly diffused throughout. Its average width is about 2 feet; the ground is easy; and the prospectors have every appearance at this moment of making a fortune.

The Provincial Government is cutting tracks through the forest to it, so as to open it up to capitalists. The want of crushing power only retards their work. Money is not to be had in this country for mining purposes of a legitimate nature, consequently good properties are kept back. If an English company could be formed to advance money on genuine properties, such as described, ample returns would be made, to the satisfaction of all concerned.

Coromandel, Dec. 13. G. F. HOSKING, M.E.,
Licensed Surveyor.

MINING IN NEW SOUTH WALES.

SIR,—In reading through the Journal I am greatly struck with the large amount invested by British capitalists in American, Chilian, and other foreign mines; whilst here is a country belonging to their own kith and kin where 5*s.* per acre annual rental, or 2*l.* per acre for the freehold, enables them to mine for every metal or gem (except gold), with good roads, police protection, and postal facilities, there is not one *bona fide* English company in existence.

Up to now we have not been a mining people in the full sense of the term, as our merchants and squatters trusted entirely to trade and pastoral produce, differing in this respect greatly from Victoria, which, with half our territory and 50 per cent. more population, and no other mineral worth speaking of beyond gold, was compelled to devote her principal energies to that industry, and thus had a school of mines, trained inspectors and surveyors, and sunk shafts over 1000 feet, whilst until lately New South Wales had only one shaft over 300 feet, and even now has only two of 400 feet, and this in a territory of 500,000 square miles, literally seamed with broad belts of every known mineral, and notably so in gold, from the rich narrow veins of Tambaroura giving over 3000 ozs. per ton, to the 300 feet lodes of Brown's Creek giving 6 dwts.

Up to the present the annual millions of gold we export have been got by working miners, mostly near the surface, and with the rudest engineering and plant; and though we are at last beginning to copy Victoria, still there is an almost unbounded field here for the profitable employment of all the skill and capital England can spare. As *our* usual way is to appoint five directors in Sydney (who never saw a mine), engage a manager (of whom we know as little), send him 200 miles away to sink a shaft, and then if nothing is got with an expenditure of a few hundreds, discharge all hands, and say "Mining don't pay!" Why, even the enormous deposits at Brown's Creek were tinkered at with a battery (?) which gave about 6 dwts. per ton to the miner, and *left* 10 dwts. in the tailings, and this, mind, not pyritous but free gold; and although less than 200 miles from Sydney, the place was not even heard of till about 12 months since! Why, if Victoria had such a deposit there would have been at least 300 head of stamps at work within six months, and a scientific analyst to check the crushings, and haul the manager "over the coals" if more than 1 dwt. was lost in the tailings. Take Gulyong, again, with its deep alluvial "leads," sending to Sydney 5000 ozs. monthly, and yet until lately no steam-pumping machinery was employed, although it was known that the richest "gutters" were beneath the water levels. These are two hap-hazard instances, but are a fair sample of our supineness and indifference, and only show what real chances there are for capitalists and miners who will face the preliminary cost of 5000*l.*, and know how to work.

Of other minerals, &c., we are now working, more or less (and a good deal of the "less"), copper, tin, cobalt, antimony, plumbago, coal, cinnabar, iron, silver, lead, opals, diamonds, and other gems, but for want of skill, persistence, and capital, very few of them profitably. Notably we have a silver mine, which is a speciality in mining even in New South Wales. The first owners were enraptured with the surface ores, and enthusiastically spent all they could spare in sinking shafts in the wrong spot—they gave in; Company No. 2 got a Chilian (?) miner, who put in levels and adits, because he had to do something, and wound-up by getting a pumping-engine of less than half the requisite power—they also gave up; Company No. 3 determined they would not make such mistakes, and spent all their money in putting the mine in "thorough order"—and they gave up to Company No. 4, who have at last really laid open large and good lodes, and are so astonished (and probably frightened) at the result that they have paid off all hands *until* they can find someone who knows how to smelt ore giving over 50 ozs. silver and 20 per cent. lead to the ton, with veins from 18 in. up to 2 ft. thick. Probably, in a few months they will also tire; and a mine which is really good, nearly in a dividend-paying position, and has had over 9000*l.* spent on it, will drift at last into the hands of some one who does know how and what to do with it.

As for our iron ores (with one exception) no one dreams of working them, though coal is always found with or near them. There are hundreds of square miles fairly permeated with them; and in one place I know of, in the side of a cliff, lying one over the other, there are three seams—ironstone, probably 11 feet thick; iron clay, 4 or 5 feet; and blackband ironstone about 3 feet. And in another spot, on the shore of a navigable bay, there is a hill with an ironstone seam, from 30 to 60 or 70 ft. thick, running through it, assays of which showed from 40 to 60 per cent., but these things are not worthy our working!

As for coal, to which our attention has been lately more specially directed, its area is immense, at least 130 by 120 miles, and occasional outcrops for 160 miles more. The deepest boring as yet is 200 feet, which intersects the three best seams we have in these pits; whilst in three separate places, and distant hundreds of miles, a seam varying from 11 to 17 feet is found (in each case) in the face of a cliff—and of all this immense field not 1-20th part is yet alienated for mining purposes.

We are the oldest of the colonies, and have got into old-fashioned grooves, and so long as we produce over 50,000,000 lbs. wool, and other pastoral produce in proportion, per year, and "sack" the principal part of the trade with the East and the South Sea Islands, our merchants and capitalists are content to let the "poor miner" fossick away over our half-million miles of territory, and also to leave it open to the investment of anyone else's capital and energy; and to such of our countrymen at home as are not afraid to open up and work mines properly there is far more real inducements for them to do so in New South Wales than in Chili, Peru, San Francisco, or even the "patent artificial" tin mines of Lake Superior.

Sydney, Dec. 29 R. ADAMS.

MOUNT BISCHOFF TIN MINES, TASMANIA.

The geographical position of the above "Mountain of Tin," as some people have been pleased to designate it, is too well known to need special notice. I will, however, observe that the distance by the road I travelled some time since, from Emu Bay to the mountain, was 55 miles. The road then in places was very bad, but I hear great improvements have taken place with regard to the roads. I presume the journey is now a luxury compared to what it was two or three months since, and although even now it may be found fatiguing. It will be seen that Mount Bischoff and vicinity is highly interesting in a geological and mineralogical point of view, and although it is a mistake to call it a "mountain of tin," there is certainly a most extraordinary deposit of tin ore existing there, such as I have never seen in Europe, New South Wales, or Queensland during my long experience in mining. On approaching the upper part of the mountain I was shown what is called the lode, on which several men were at work extracting the ore. I found the width of the deposit to be about 24 ft., and the length, then opened, about 30 ft. or over. The depth at the face of the working was about 12 ft. composed of what appears to be an aqueous deposit of oxide of tin, titaniferous, and other ores of iron, with a little granular quartz cemented together, some of which is very hard. Boulders of this can be seen from a few pounds up to 10 tons or over. I broke a sample from the above large boulder, which yielded after careful treatment over 20 per cent. of metallic tin. Other boulders taken from near this gave 40 per cent. of metallic tin, and I believed picked stones would yield 60 per cent.

The Mount Bischoff Tin Mining Company have another deposit of tin of nearly the same character, not far from the before-mentioned, but at the time of my visit very little had been done in opening it up. If at any period of the earth's formation what is now the upper part of the mountain had once been a valley, river, or creek, it would be less difficult to account for such an extraordinary aqueous deposit of tin, iron, &c., some of which is cemented together as hard as granite. From all I could see, I do not consider there is any lode yet discovered. What I have before described does not resemble any lode that has ever yet come under my notice, and I have seen a great number. The only true lode I saw at Mount Bischoff was one of antimony, in Mr. Smith's section, in a slate formation near the granite. That very important lodes of tin may be discovered ultimately in the granite of Mount Bischoff is by no means unlikely, and the slate which joins the granite is also likely to produce silver, lead, and copper, as well as antimony, &c. The detached alluvial tin is found more or less all over the sides of the mountains, as well as in the valleys and creeks, some of which will no doubt become highly remunerative, I cannot but think that Mr. Smith's discovery of tin at Mount Bischoff will lead to a vast commercial prosperity for the island if properly managed; by this I mean the workman who has the care of the treatment of the ores to bring it up to the highest produce possible for the market (without much loss) must be a practical man in that branch. Whether it is tin, silver, iron, or anything else, success depends on putting the right man in the right place. I find Mr. Moore, the Minister of Lands, has proposed allotting a portion of the water reserve to the claimholders, I presume according to the priority of application for their land, to enable them to erect machinery, &c., to dress the ore. This certainly is a good plan, and when a tramroad is constructed to a shipping port, so as to reduce the high rate of carriage, this new source of commercial enterprise will be quickly and beneficially felt. I have for a long time entertained a favourable opinion of the mineral resources of Tasmania, and I have reason to believe that more tin and gold will be brought to light ere long.

Geelong, Dec. 17. JOHN HUNT.

EMMA MINE.

SIR,—I have telegrams from Salt Lake, dated Feb. 16, which say "Attwood's report misconstrued," and "Universal opinion here Emma safe investment," and which are in answer to questions from this side. Also a letter, dated Jan. 19, which mentions the sampling of 90 tons of ore of 320 ozs. per ton that same week, and 10 tons more of $1000 per ton, and that 'they are putting in a powerful pump in order to be able to place any number of workmen in the deepest workings; therefore in about a week they will have 40 men working and opening out ground to stope out quantities of ore. As mentioned in last week's Journal by "Scrutiny," the water which has been drowning the shares will at last disappear, nor can there be any great quantity, since Prof. Silliman said in his report that the adit level was 500 ft. above the water level of the canyon, and we are not nearly so deep yet. There is an evident desire to depress Emma shares, but I doubt any purchaser having got any number under 3*l.*, even during the panic created by the directors' circular. The fact of the lode having been found in granite is owing to its having been lost by a dislocation or heave, and it is equally rich in the new formation, since the ore is put into bags underground, brought to surface, and sent away without any dressing or cleaning. The lode having now got into the heart of the hill and into firm ground, 13 ft. in width, and into rich ores, is sufficient to show we are on the eve of a new bonanza, probably larger and richer than the first one, of which the owners had the kernel and the purchasers the shell, and in a month or so it will be impossible to hide the truth from the shareholders, who have evidently valued the circular at its real worth, or otherwise the shares would have fallen to 1*l.* or so, and the confirmation of the above information is only required in order to raise the shares to 5*l.* or 6*l.* I get information regularly, and from a competent person, who is a relative, and am, therefore, at no expense except the telegrams to Salt Lake. P. S. J.

THE UTAH SILVER-LEAD COMPANY.

SIR,—At the meeting on Tuesday the Rev. Mr. Probert stated that the loss on the former smelting arose from using Wyoming iron as flux at $25 per ton, instead of using the pyrites from our own mine, which may cost about $5 per ton extracting, but as they hold gold and silver our own flux would result in a profit, and not an expense—that is no doubt true, but the financial and practical cause of the great loss of the former smelting arose from all the ore being smelted as it came from the mine without dressing. This is the advantage which will result from the concentrating and dressing machinery erected by Mr. Longmaid, which brings 80 tons of 20 per cent. to 20 tons of 70 per cent. lead.

Therefore—20 tons lead of 70 per cent. and 16 ozs. silver
flux—10 tons pyrites, containing gold and silver

30 tons at $10 per ton smelting ..... $ 300

Formerly—80 tons lead of 20 per cent. and 12 ozs. silver
flux—40 tons Wyoming iron

120 tons at $10 per ton smelting $1200
plus 40 tons of iron flux at $25 1000

This calculation is per day or per week, according to smelting facilities. Mr. Probert said that as much flux was used as ore smelted, consequently the argument is so much more in favour of smelting concentrated ore now, so much smaller a quantity of flux being requisite. The lead can be concentrated from 80 to 20 tons, but, unfortunately, the silver is only increased from 12 to 16 ozs., arising from the ore containing blende, but we certainly cannot afford to smelt the 80 tons of lead in order to save some of the silver contained, as the cost is more than the silver saved. It is easy to prove that even the concentrated ore cannot be shipped to London, to be sold at Chicago, or even at Salt Lake, by sending 10 tons of equal quality to each place, and we have no remedy except to smelt concentrated ore, which will require smaller capital and plant, which the shareholders may be induced to provide. Mr. Henry Sewell pointed out long ago the value of the pyrites, not only as a flux for our own ores, but also for sale, as there are immense quantities in sight, especially to the Mammoth Copperopolis, who if they understood the metallurgy of their ores would reduce them to a regulus which would concentrate the gold and silver contained in their ores, as well as in the flux they would purchase from us, instead of making black copper. This is a point which the Rev. Mr. Probert may turn his attention to, as he is desirous of assisting us out of our difficulties, and his metallurgical knowledge may be approved of, and his ideas carried out by the Mammoth Copperopolis.

JOHN P. SEWELL.

UTAH SILVER-LEAD MINING COMPANY.

SIR,—After the meeting of shareholders yesterday my attention was directed to a possible misunderstanding of some of the remarks made by the Rev. Mr. Probert as to lead smelting by blast-furnaces instead of reverberatory furnaces. Some shareholders present, it appears, believed that Mr. Probert meant to assume that the blast-furnace was the furnace generally used by smelters for the reduction of lead ores. Had I supposed that such was Mr. Probert's view I should have replied, and shown it to be altogether erroneous.

At all the large lead smelting works in this country, without, I think, a single exception, reverberatory furnaces are used exclusively for smelting lead ores of every description, the metallurgical process of reduction being well understood, and effected in a complete and satisfactory manner.

As for the blast-furnace, it has long been a thing of the past, and discarded even for reducing slags and scoria as a wasteful and most extravagant process of reduction.

I trust that you will give prominence to this as a note to proceedings of the meeting.—*Feb.* 18. FREDK. BENNETT.

RICHMOND MINING COMPANY.

SIR,—The *Mining Journal* of last week contains a reprint from the "Engineering and Mining Journal" (New York, Jan. 24) of an article on the Richmond Mine, signed J. D. Emersley. As the writer chiefly founds his criticism on the reserves and future prospects of the mine on statements he assumes to have been made by me as Chairman at the meeting of the company on Nov. 15, I would ask your permission to offer some explanations in reply.

Mr. Emersley has long been known by reputation to those conducting the company's affairs on this side as a pioneer prospector of indomitable energy, and one, therefore, whose opinion on practical points within his ken is entitled to great weight. On the present occasion he must excuse us for not attaching too much importance to his opinions, because of the difficulty in crediting him with unbiassed motives in offering them. Mr. Emersley has all along been one of our opponents; he was one of the last to threaten opposition to our patent unless we acceded to his demands. Those demands were not considered reasonable; and although Mr. Emersley thought better of his threat, it can scarcely be expected that he should think any better of the company that declined to be moved by it. Under the circumstances I think many men would have said harder things than he has done, and his admission that "The Richmond is too good a mine to need exaggeration in speaking of it" is a very kind and candid thing for such an opponent to say. Moreover, he is not a sneaking antagonist, who indulges anonymously in calculated calumnies, insidious ifs, or insinuated failures, but puts his name openly to what he writes.

He takes umbrage at starting at my having, as he states, "indulged in the usual sneer at American experts," as if they were the only sinners. I certainly did say that facts in our case had gone a long way ahead of reports, an unusual thing anywhere, especially on the continent of America. I did not mean to convey the idea that American experts were more unscrupulous than the general run of men in the same profession here, but rather to instance the fact that the Britisher raised in this little island, where, as one of Mr. Emersley's countrymen said, he was always afraid to go to sleep for fear of tumbling off, had no chance, owing to his confined physical associations, of rising to the height of exaggeration possible only to a native of a country where the plains are so expansive, the mountains so extensive, the rivers so enormous, and the cataracts so stupendous. It is obvious that England was not large enough to afford a field for the Erie Railway frauds, or to give scope for the Arizona diamond bubble.

It is, nevertheless, a fact that some of the most reliable, sober, and skilful reports on American mines have proceeded from American experts, as it is only Mr. Emersley who indulges in a sneer at the implicit faith reposed on this side in the statements respecting the Richmond made by Mr. Clarence King. It is true that the calculations made by that gentleman as to the reserves *above* the Lizette Tunnel, calculations subsequently confirmed by Prof. Price, were eventually, by further explorations, proved to be in error to some extent, owing to the existence of a "limestone horse," which the cross drifts mixed on each side, but this fact was at once communicated to the shareholders, and its effect discounted in all subsequent statements as to the reserves.

Mr. Emersley thus defines the meaning of reserves:—"A body of ore which could be accurately measured and sampled in every part, so as to determine its actual money value, just as exactly as a quantity of grain could be measured by the bushel, or a stack of iron bars be weighed by the ton."

That any practical miner should have committed himself to a definition so absurd is certainly strange, to say the least of it, as such a method was never yet followed, and never could be observed. Mr. Emersley goes on to say, "But if such a test as this were applied to the reserves in the Richmond Mine they would be found utterly fallacious." How can he prove this except by measuring it all by the "bushel," or weighing it all by the "ton?"

So far from the Richmond reserves being the result of mere guesses, great pains have been taken to get an average of measurements in every direction, for which purpose numerous drifts have been cut.

I stated at the meeting referred to that although we had taken out some 25,000 tons there were still about 80,000 tons in sight, the results of the recent discoveries having added a much larger bulk than we had taken out. Mr. Emersley quotes this correctly, but proceeds to attack an assumed statement of mine as to there being at that time "12,000 tons in sight," a statement which I never made, or implied.

Mr. Probert, at the meeting on Jan. 27, gave the following dimensions as the basis of a calculation as to the reserves below the Lizette tunnel:—300 ft. long by 100 ft. wide, and 40 ft. below the hanging and foot walls, which gave a result of 80,000 tons, from which he deducted 20,000 tons for probable waste, leaving 60,000 tons as the result of three months' work. That gentleman, in his desire to avoid any approach to exaggeration, materially reduced the dimensions which have been named to the board. The 300 ft. length is not subject to error, the width of the lode as it starts below the Lizette tunnel is given as 80 ft., and at the depth now attained as 150 ft., while the space between the hanging and foot walls appear to vary from 40 to 80 ft., and from that to 110 ft.

It is not pretended that the vast mass which these figures indicate is all one homogeneous body; there is no doubt a considerable portion of ferruginous ore, some of which has to be thrown aside, but then there are seams of ore extremely rich in gold, and batches of carbonate of lead with a high percentage of silver, so that the existing average in quality and bulk is sufficient to redeem anything that I stated from the suspicion of exaggeration. I understand that if Mr. Emersley was ever in the mine at all it is not probable that he has seen it for the past twelve months.

Mr. Emersley disputes the correctness of the cost of mining and smelting; those results are taken from our accounts, and can be proved. He founds his objection on the ground that "the costs and profit would only give $40 ore, whereas he knows the ore to be much richer than this." The board know this too, and have told the shareholders of the steps that must be taken to get a greater value than hitherto out of the very rich ore the mine contains. The last average assays gave $86 in silver and gold, and $20 in lead. Mr. King based his estimate on $40 ore. Mr. Emersley might have had the candour to state that if in one instance, by a chance no human being could have foreseen, the calculation in relation to one portion of the mine had fallen short, in another way it had been greatly exceeded.

After all, however, these cavils and quibbles as to the "reserves in sight" are of no moment in comparison with Mr. Emersley's confident assertion that the Richmond ore is merely a "deposit," and not a lode or vein. "A man convinced against his will, is of the same opinion still." It is natural that one of our persistent opponents should continue to dispute a fact that has been established by such unprecedented and indisputable testimony: a fact that the Richmond Mine is a true fissure vein, traced down already some 600 ft., and giving fresh evidences the deeper it goes of its intention to go on indefinitely.

Mr. King formed his opinion on this point on the signs apparent above the Lizette Tunnel. His deep scientific knowledge enabled him even then to see that the form of crystallisation precluded the idea of the ore having filtered in as a deposit, and he stated that the "mighty torrent of lead under his view must have come from below." In the Court, during the recent trial, after giving his reasons in detail, he summed them up in these words—"I pronounce this to be a true fissure vein." How completely his predictions are verified by the subsequent extension of the workings is known to the shareholders. It will not, perhaps, be long ere the constantly accumulating evidence will force Mr. Emersley to acknowledge that the Richmond is a permanent lode of great richness and marvellous magnitude.—*London, Feb.* 18. ——— J. Elliott.

RICHMOND MINING COMPANY.

The "Mining and Scientific Press," of Jan. 17, published at San Francisco, contains a long article headed "American Mines and English owners." Alluding to the great injury done to American mining prospects by the natural distrust of them now entertained in England, due to the acts of the unscrupulous "mining sharps of both countries," who had combined to impose fraudulent schemes based on worthless properties on the too-confiding British capitalists, and mentioning some of the most conspicuous of recent mining failures, the writer proceeds to remark:—"Thus far we have been glancing at the dark background of the picture, now let us look at the bright foreground and see what we will find there to act as an offset to its unredeeming traits. It is gratifying to be able to produce anon one object of interest amid so much to condemn, and the object is the property of the Richmond Consolidated Company of London."

After giving a description of the various mines now comprised in the property, detailing the nature of the ore, the great works completed or in progress connected with the mine, and giving the history of the lawsuit with the adjoining company, which ended so successfully for the Richmond Company, the writer thus concludes:—

"The mine is indeed wondrously rich in the amount and quality of its ore thus far exposed to view, and is, should there be no further development, made sufficient to run the company's furnaces during the next two years or more. The imagination alone is incapable of grasping at anything like an accurate idea of the thousands and thousands of tons of high grade ore now in sight, and it would certainly take a more capable pen than mine to give even anything like an approximate description of it or of its longitudinal or lateral drifts and cross cuts, or of its vast chambers, elegantly and substantially timbered in a manner at once durable and safe, which reflects credit alike on its efficient, experienced foreman, Mr. Rossiter, and on its successful superintendent, Mr. J. B. Metlee. The wondrous riches of the mine will add to the prosperity and permanency of Eureka, and bring a smile of satisfaction to its lucky shareholders."

THE FLAGSTAFF MINING COMPANY.

Sir,—The reports and accounts of this company are now in the hands of the shareholders, and the adjourned general meeting takes place at the London Tavern on Tuesday next. Through the Journal I desire, in advance of the meeting, to lay before the shareholders the accompanying copy of a letter which I addressed on the 14th inst. to the Chairman, and of the resolution I intend to propose as an addition to the resolution for a committee of enquiry, notice of which has been given by Mr. Colborne, a shareholder, and which the directors have circulated with the report.

I leave it to the shareholders to form their own opinion of the acts of the majority of the directors in refusing to circulate my resolution also. It is known to many shareholders that at the meeting of the Tecoma Company I proposed and carried the resolution under which a committee is now sitting, and will report to the adjourned meeting on March 3. I did so as no notice of such a resolution had been given by anyone, and I felt that both the honour of the directors and the interests of the shareholders would benefit by such an enquiry. If needful I should have done the same at the Flagstaff meeting, but I am very glad that the resolution is to come from another shareholder.

I hope and believe that there will be a full attendance, and I trust that this question of a committee will be at once taken up, so that the shareholders will not allow themselves to be drawn off to the consideration of any less important matters, until the resolution is carried, and the names of the committee agreed upon.

W. Maitland,
Director of the Flagstaff Mining Company.
Flagstaff Mining Company's Office, Great Winchester street, Feb. 21.

[Copy.]

Sir,—In reference to the annual report now about to be issued to the shareholders, I beg by this letter to place on record what I said at your board yesterday,—that I have no part in what is said as to the arrangement made in December last with Mr. Davis, as I had no part in making that arrangement, as I believe it to be a bad one, and I would have opposed it had I known what was contemplated, and as I am sure it is one which ought never to have been made without the consent of the shareholders. You are well aware that in October I wrote from the Isle of Wight strongly urging that we should call a special meeting of shareholders, and that on Nov. 14 and 21 I formally moved a resolution to that effect. I regret much that the other directors should have determined to refuse to print and circulate to the shareholders the resolution of which I gave you notice, but which I intend to propose to the meeting.

My object was to give them plenty of time to consider my resolution. I claim the same right as other shareholders. You are aware that it was I who proposed that we should at once agree to the requirements of Mr. Colborne, Mr. Gray, and any other shareholder, and print and circulate all that they wish to propose. I do not think you will benefit your characters by illegally and unfairly attempting to deprive me of a right which has been claimed by others, and which I was one of the first to urge should be recognised and acted on.

W. Maitland, Director of Flagstaff Company.

Resolution.—"And that it be a special instruction for the said committee to take into their early and serious consideration the agreement made with Mr. Davis in December last, and the position of the company's affairs in America in connection with that agreement, and with Mr. Maxwell and Capt. Forbes, and more especially with the causes which have led to the hostile action on the part of Captain Forbes, and, further, to enquire as to any propositions made by shareholders, or directors, or both, for calling a special meeting of shareholders, instead of waiting for the annual general meeting." ———

NOTES ON A JOURNEY IN INDIA IN 1861.

Sir,—It was 8 A.M. when we left Jubbulpoor, the sun high in the heavens, and our road lay through one of the loveliest valleys of the East, shaded on each side with the mango trees towering aloft, and loaded with the most delicious fruit. On we rode, until we entered a bye-path from the open valley. On each side, and in the surrounding valley, lay immense boulders, some weighing from 10 to 100 tons (which had at some time been brought down in the drift period), beautifully worn away, and standing like large cones, and here and there stood the remains of old castles, as if some Oliver Cromwell had been at work, and in the distance were seen large tanks to preserve the water: then we came, again, to some beautiful trees, under which it was refreshing to stand and view the landscape for a few minutes, and throw the mind's eye back for ages, and think of the different periods which have passed before India became a tropical climate; epoch after epoch succeeding each other, until it was fit for inhabitants to dwell upon; also to think of the hand to hand encounters the first pioneers had with the monsters of the jungle, which would require much courage and bravery to prepare it for the more advanced tide of civilisation, and to build up the large fortifications and castles similar to those we have in England.

India had its courts, its armies, and the natives studying arts and sciences before England had its histories, and who knows but that Alexander the Great might have stood there in his day, viewing his troops as they marched past.

After arriving at a ghaut we proceeded to make a geological exploration, and we find that the Nerbuddeh river has cut its way some 300 ft. through a gorge, and takes a most graceful curve to the left, which was a sight for an artist; then there was the white marble on our left, and the trap rock on the right, the whole of the rocks tilted at an angle of 75°, palm trees growing on each side of the river, and in the rear Hindoo temples are to be seen which have stood for centuries on the river's banks. Taking a boat, we glide slowly up the stream, passing rocks which come up to the surface in succession, according to order, until the coal measures are seen at a point in the river near to where the Great Indian Peninsula Railway crosses; there the first of coal comes to the surface, 3 ft. thick, and dips east 15°, and within 5 miles of Jubbulpoor, and there is not the least doubt but that extends for a great distance east, and that a series of coal beds could be found along the railway.

We now go on for 4 miles further, to look at some iron ore mines, 16 ft. deep, lying in thin layers from ½ in. to 3 in., interspersed with shale. The iron ore is of first-rate quality, and the natives crush it down, and put it into rough-built furnaces, the bellows being made of goat-skins, and the blast being got up with a mixture of charcoal. After some hours blowing, pieces of crude iron are brought out the size of a brick. Truly Tubal Cain never had a more rude furnace than those to use in the art of making iron. But now our guide informs us that we must return, as the twilight is of short duration in the tropics, and after some few miles ride we return to our tents just as the sun is disappearing behind the hills when it is midday in Old England.

The next morning we again proceeded to the river, taking another direction, where we find large trap dykes intercepting the rocks every few miles, and often changing their angles. The general tendency of the rocks have a dip to the east. Immense quantities of coarse sandstone crop up (of about the same age as the Bunter sandstone in England), and in the valley immense quantities of alluvial is deposited, sometimes 20 ft. to 30 ft. in thickness, which have been brought down when the river overflows its banks, as the water rises from 15 ft. to 60 ft., there being 130 in. of waterfall during the season, lasting 14 weeks, causing floods in the valleys, in which rice, tobacco, sugar-cane, and cotton grow. In the hot season after the rain the soil in the valleys is extremely rich and fertile, like a sponge, and the vegetation is rapid.

As our journey lays through the valleys, we saw that each village was devoted to its own special industry. Some were weaving, spinning, and dyeing cloths; others were engaged in working iron, and it was amusing to see them take a piece of iron, the size of a brick, and heat and strike it until they get into form. It seemed to me that if an English company had some rolling-mills erected in some of the central districts where the iron is produced, there could be no doubt that it would be a very lucrative undertaking.

As we approached the hill which defined the boundary of the river the mountain limestone stood out very prominently. In this limestone large quantities of lead ore had been mined, but were abandoned. The Government has certain rights over all mines. The mining is in a primitive state, as the natives carry out the minerals in small baskets, and immense quantities of earth been excavated and laying in large heaps, showing that they had taken centuries to raise. The largest iron-producing district is Tenchuchore, from which place iron is exported into the interior. We arrived at the town at night, and our business was to visit the famous ironworks, when some of the ironmasters told us how the mines had been worked by the native rulers to their interest. There are some quantities of iron ore of the best quality, and in the hills lead, copper, and other minerals are found, which will be worked as the facilities for transport are increased.

We had then got within 10 miles of the boundary of our territory, and were in the domain of Bhopal, where we saw on climbing up the rocks that the coals measures cropped out overlaid with the well-known sandstone which is generally found in India. There are some very large coal fields in Central India, which will be developed for the railways. The coal measures in India are much nearer the surface than ours, and are covered with large-grained sandstone, and very few fossils to be found.

The rocks of India are often found to be more disturbed than with us. Sometimes you find the lower rock and the upper one in very close proximity; and in travelling a few hundred miles by the rivers you have some fine views, sometimes beginning at the lowest and going up to the higher formation in some districts, while in others they are very much convulsed.

Of course coal is not required for domestic purposes, so that a coal famine cannot affect them; but no doubt the days are not so far distant but that iron and steel will be made in India for ten months in the year for their lighter work.

As we retire, after another day's search, to our tent at twilight the soft fragrant breeze springs up, loaded with the perfume of the tropical spices gently wafting; and casting a retrospective glance upon the scene into the vistas of dim distance for countless ages, we could picture in our minds one of the most remarkable of these epochal exemplifications. There we saw boundless tracts of these epochal forests of lapidodendre, boniferæ, sigillari, and towering tree ferns waving their graceful forms in mid air, and densely constituting vast mistic regions of solitude and shade. The dank and steaming soil of these tropical latidues being indeed everywhere prolific, with a thousand beautious forms so characteristic of the coal fossil flora.

No eye of intelligence seemed to be there to join in gazing upon the pristine beauties, and they seemed to have flashed into life and vigour to waste their fragrance on the desert air; yet in verity they were the efficient processes of glorious thoughts immensely distant. The era arrived when these seeming organisations were to be laid prostrate in death, gathered into capacious repositories there, effectually sealed down, transmuted into coal, and carefully conserved for the use and and wholesome progress of the myriads of intelligent beings who remotely were to people the earth.

Hawthorn Cottage, Wombwell, Feb. 12. J. Harrison, M.E.

BARRENECHEA NITRATE OF SODA COMPANY AT YQUIQUE AND LIMA.

Sir,—I should feel much obliged by your inserting in the Journal the following very important article from the "Patria," a Lima Journal of Dec. 10, 1873.

The system for which a privilege has been given by the Peruvian Government for the manufacture of nitrate of soda by dissolving the mineral in water, and which is due to the happy idea and labour of Mr. Charles Ferant, has just been crowned with splendid success at Yquique.

This system consists in liquefying the native nitrate that is found in the interior of the province of Tarapaca, and conducting the impregnated water through cast-iron tubes to the coast where the evaporation of the surplus water, and the separation of the chloride of sodium from the nitrate of soda, are effected. This system, simple in itself, but the plant for which is costly, is a very happy idea. The *modus operandi* is as follows:—

After the nitrate of soda is removed from the beds where it is found, at a distance of between 8 and 12 leagues from the coast, it is crushed by machinery, and then falls into cold-water tanks, in which a rotatory motion facilitates the dissolution. When the water is sufficiently impregnated with it, and which is ascertained by means of a salinometer, marking from 32° to 34°, a density which does not allow of an atom of crystallisation, without being subjected to evaporation, the water impregnated as above mentioned, is received into reservoirs in which the earthy and other particles are precipitated, and after 24 hours of rest the water is as clear as if it were filtered. It is pumped out to a height of about 150 ft. to the top of one of the low hills to be found near the nitrate of soda beds, for we must observe that those of native nitrate are always situated in low-lying ground, called "holladas." When the water has reached that height it is led off by conduits of 10 centimetres, at most, in diameter, and follows a downward course to the coast. The pipes, which are of cast-iron, are sunk about 50 or 60 centimetres below the surface of the soil, so as to avoid changes of temperature, and from endless curves and syphons, so as to avoid the irregularities of the ground in this volcanic district. Received at the coast into reservoirs, the water, which has a degree more or less the same density as when it left its point of departure, is subjected to evaporation in boilers, according to the system practised in the manufacture of saltpetre in Europe.

The principal advantages of this new process for manufacturing nitrate of soda are—

1.—The reduction of the cost of carriage which is from 75c. to $1 per quintal.

2.—The manufacture of the article on the coast allows of having shipping places for the superior nitrate near the establishment, and ensures a further profit by the sale of the chloride of sodium, which in the interior is worth nothing, but which on the coast represents a value of 50c. per quintal.

3.—Moreover, as the evaporation of the impregnated water takes place in closed boilers, it allows drinkable water to be obtained, the sale of which for ordinary consumption on these arid coasts compensates the cost of the fuel.

If we add to these three immense advantages those that can be obtained from the water in its original state, which contains nitrate of potash and iodine, as Monsieur A. Raimondi remarks, we shall easily understand that the future of this company is most brilliant. After having passed through a great many trials in places destitute of every resource; but this is generally the case with every new thing, especially where there is innovation in existing systems.

The reality of the practical fact exists since the beginning of December, and the increase of the quantity produced is daily seen in the establishments of this company, as is shown by the reports of Mr. P. Correa and S. Hindle, who were sent as commissioners to the spot by the Lima board. The reports of these gentlemen are full of praises of the system, and have given great confidence in the enterprise, which at times criticism has somewhat shaken. The merit of the invention is now fully ascertained, and its authors will "live with their glory."

This information will, I have no doubt, be highly interesting to all those of your readers who are concerned in the material welfare of Peru. Nitrate of soda is the article of export from that Republic next in importance to guano; and as the stock of this manure diminishes everything which tends to reduce the cost of what is likely to prove its most efficient substitute must be regarded with great satisfaction. ——— J. Studdy Leigh.

DESULPHURISING AND CHLORIDISING SILVER ORES.

Sir,—Pray allow me space in your valuable Journal for the purpose of eliciting from your intelligent experienced readers some information regarding the many varied and peculiar trials that have been made from time to time at different places for testing the merits of various roasting furnaces, which were severally intended for gaining time and economy in this process—by either forcing, or allowing the pulverised ore to fall through the heated gases—in some manner, so that better and much more speedy results were in each case claimed by the inventors than could be realised from any of the reverberatory furnaces, where the ores were merely placed on one or more hearths, heated to a proper degree, and stirred as required by "hand rakes." I remember many instances of such futile attempts for impossible instantaneous results; and as it is a noteworthy fact that all of the largest metallurgical establishments in Europe, after many trials of such furnaces, still continue to use some one of the forms of reverberatory furnace, I shall be much obliged for general aid on this subject; for it is highly important that the miners and metallurgists of the world should know that such trials have but served to prove that all appliances for instantaneous roastings and chloridations, are, comparatively speaking, of no value.

Those who may favour me with replies will please state when such were used, the comparative results obtained, if the furnaces were patented or not, and who were the inventors?

As the above is intended to draw forth facts from a discriminating public, it is unnecessary that the inventors shall reply, as they can scarcely avoid favouring their own schemes. J. S. Phillips.

San Francisco, Jan. 23. ———

CORNISH TIN MINING.

Sir,—That disaster has overtaken the staple product of the county no one in his senses can now deny. The great county meeting, at which the "four-weeks" month was inaugurated, and which was concocted, and at first promoted, by only a very few, has contributed its full quota of mischief. The majority of legitimate adventurers, and all other sensible men, were utterly opposed to such an absurd course as the adoption of the lunar to the overthrow of the calendar month, which has brought about wholesale confusion and distraction, both in mining accounts and in the mining interests.

I have no doubt many agents who preferred 13 pays to 12 in the year, in the way of an under current helped on the movement. The working miner had just ground of complaint if, under the old regime, he was not allowed to get his additional pay in the "five-weeks" month; and I fear, although I am ashamed to write it, that it is only too true that this was sometimes the case. I have heard from various quarters of the tenacity of many agents in bringing before their respective committees a uniform average of gettings, and thereby propagating a system both of idleness and loss to the worker: and equally, indeed even more so, of ruin to the adventurer. The mine agent who would not pay his men in full for the extra week should soon lose his jacket if I could do it.

I will now leave the "four-weeks" month for a question or two of much greater importance. It must be palpable to everyone that the prices of coal, iron, timber, and other mining supplies have been raised to and maintained at an exorbitant price by a "ring." Let this be carried on a little longer and the yarn will become too slender for any practicable purposes to the parties concerned. They ought, however, to understand this matter better than we, and see the inevitable ruin that is fast coming on them.

There is another question which I consider should have prominent mention. I think that most people are now agreed that there is a "ring" to keep up the price of coal, and I regret to add that very many are of opinion that there is a "ring" to keep down the price of tin. All tin producers, in fact, know right well that a smelters' "ring" has existed for very many years, and that it never was so formidable as at this moment. If you have 10 or 20 tons of tin to sell you must cart it to the smelting-house, without even knowing at what standard you are to sell, the smelters having recently declined to send out circulars, and having also refused to purchase by a sample, a thing almost without parallel in the world. Well, they take it from you, weigh it, assay it, and almost invariably tell you the produce is not up, and the quality is inferior. After a few remarks about the prospects of your mine, and others in the neighbourhood, the tin bill is handed over at a given price, and oftentimes with the assurance, in a very earnest way, that it is really more than it is worth.

This portrayal of the sale of our tin ores I can from experience affirm to be true. Can it with any propriety be called SELLING tin? As a tin producer I protest against the system as one of injustice and oppression.

I am aware that I write strongly, but not more so than the case demands. Personally, the helplessness of our condition may not affect me very long, as I have resolved that the parties who pocket such enormous gains shall, as far as I am concerned, if the present system is allowed to prevail, raise the mineral for themselves, which, I apprehend, they will find not only a very difficult but a very unremunerative business. The outlay of energy, risk, and brain-power in the production and dressing of tin is prodigious, as compared with the mere smelting process, which any practical man of ordinary ability could easily master, and with which many producers are already conversant.

The repeated fluctuations in the smelters' prices for our ores are universally complained of. Let any little failure or untoward circumstance arise, to say nothing of an election, and the price of tin is knocked down from 5*l.* to 10*l.* per ton in a fortnight. I verily believe best tin ores would fetch 80*l.* per ton to-day if put in the market by the producer.

I would recommend every mine producing 20 tons per month and upwards to put up a furnace, which could be done for a few hundreds of pounds, and send their produce to market in *metal*, without the aid of the middle-man. Some will say a mixture is necessary, but you may depend upon it there is not all the world in that: however, let it be so—a ton or two from a neighbouring mine or a few slabs of Straits would answer every purpose.

In conclusion, unless the smelters help us in the way of giving us our honest due by maintaining fair prices, or we at once help ourselves, the tin mining of our old county will come to grief. If we don't bestir ourselves in some such way as I have suggested I think

we shall soon have a precedent from our Australian competitors, who are only a little over a year old. I am greatly mistaken if they have not already seen the folly of sending their tin to England, to have just what may be paid for it, and I shall be yet further mistaken if they don't smelt their own tin before we awake to our true position.

Feb. 13. TIN MINER.

MINERS' CONVERSATIONS—"AGENT" AND "JOHN."

SIR,—I notice that someone is rather annoyed at the remarks of "Agent" and "John." I thought it all idle twaddle, coming from some low narrow-minded being, as I know more of the subject he writes upon than he appears to do. A deal he has written is untruthful, and very unbecoming any man to write. It only shows his grade and position. I was in the City a few days since, when I was surrounded by a party in the Exchange. They remarked on some one's reply to "Agent" and "John," and asked if I knew the man? I said I did not know who had time on hand to write in such a low way. They said I certainly did know him, and made some remark on my once going underground in the United Mines, and what happened; after that I did know. They went further, and said that a man came into the country once as a tailor—he got a situation as a gentleman's butler or groom, but he got out of that; he then carried a chain to measure a parish; then to measure potato fields; then he tried his hand as a report writer for idle loafers; then he set up for a mine inspector, but in the (now) depressed state of mining he can get nothing to do in that way; then he tried at writing dialogues between "Agent" and "John," or he will otherwise engage to write any man or agent up or down in the world. From what I gather by his writings this looks much like being truthful; and if this is his character he is certainly a very dangerous person; he is, however, not particularly so to Capt. Teague, Capt. Thomas, myself, or Mr. Lanyon, as we can take care of ourselves, having nothing to fear from this class of writers. We are out of their reach; but such a man is a dangerous being to the young and rising aspirant who is working hard to make his way in the world. This man is doing no good to the young end dull class that are attempting to come out, as their own meagre abilities and reports will condemn them. He can only live upon them for a day, as they are not the right class of men to work their way up. If he has really begun this game his days are numbered, be he whom he may.

I mentioned above I was asked if I was not underground in the United Mines some 15 or 16 years since. I said I was, and thoroughly surveyed the bottom of the mine and the east end of it. I gave a full report as to what I thought of the mine. That report is still in existence; I think it was published in the Journal. On leaving the mine I rode to Truro, stopped the night at the Red Lion Hotel, rose early in the morning, when I was called out by a man who said I was wanted outside. I went to the door. He pointed to a well-dressed man down the street, and I walked down to him and asked what he wanted. He said "You were at our mine yesterday." I asked what mine? He said the United Mines. I said I was there. He said the rule there was that every agent or gentleman who went down in the mine had to pay 2*l*., and that was shared amongst the trammers. He said he should have come to me when on the mine, but was not there. I demurred to it, and asked if he would not be content with 1*l*. He said, "Certainly not, as it was the rule, and everyone paid 2*l*." I said, "You are not a trammer." He said, "No, he was not a trammer, but he was an agent." I began to look round for a policeman, when I saw Capt. Pill, then agent of Great St. George Mine, on the other side of the street. I ran across and asked if this man was an agent of the United Mines. He said he believed neither of them had anything to do with the mine. I said I would get a policeman and have them taken up, for attempting to extort money under false pretences, when they were off down the street, and round the corner of the Coinage Hall, out of sight. Had a policeman been to hand I would have stopped each of them. I do not know who "Agent" or "John" are, but it has been hinted they are the very same two men. I should hope they are not the same, for, if so, I fear they are still living by their dirty work, the last thing a man should take up. I may very fairly ask Cornish practicals, if this is the class of men they allow to go into mines as reporters, what could they expect of Cornish mines but failures? Had the agent worn out 50 brooms sweeping stables, and a chain in measuring potato fields, what could he have known of ore, lodes, elvans, or strata, or where ore was likely to form? It is this class of men who are ever damaging the whole mining community.

N. ENNOR.

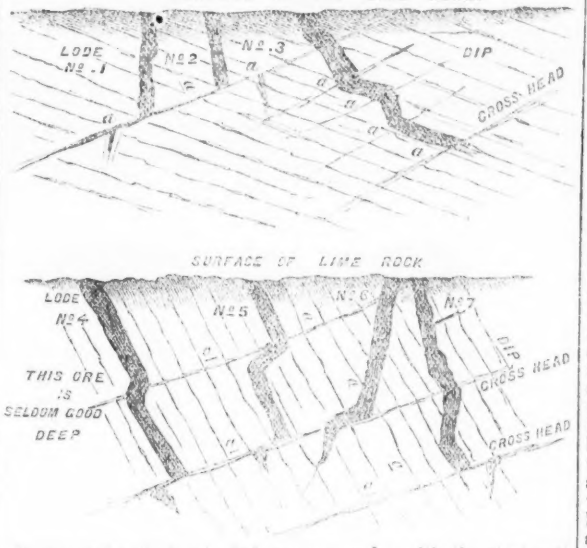
MR. ENNOR ON AMERICA, AND ITS MINING.

SIR,—In my youthful days America was known to most Englishmen as the New World. In these days of emigration it has attained the more general name of America. That country in early days was by many supposed to be a new world. I should judge, from what Moses wrote, were he now living he would have joined in the same cry; but navigators of the present day know it is part and portion of the same world, and formed and worked under the same laws. Then, we have every reason to come to the conclusion that all strata are about the same; they circulate, or, so far as seen reports go, undulate, and are composed nearly of the same substances. In many places a portion is missing, either gone or was never formed. I notice that Mr. Sewell remarks in his sections, not plans, of two American mines in lime formation, as shown in the Supplement to the Journal for Jan. 31. This, if correct, is quite as new to me as America was to my grandfather. The saying was then, as now, "There is nothing new under the sun," this being now admitted to be part and portion of the same old world, and under the same sun.

I have to ask Mr. Sewell if it is he or Nature that made this mistake? I have had to do with almost every known rock that bears ores. I have said before that lime aids in the formation of nearly every ore; in fact, it is often the first rock formed after the primitive rocks; it is the very rock and substance that neutralises the gases, and brings them into a fit state to support animated life. I have had a deal to do with mines in lime and most other rocks. I am aware that lime produces ores in abundance, still it is not a favourite rock with me; it is treacherous to deal with. I would never purchase a mine in lime rock, further than I could see it. It is the most treacherous of all known mineral-bearing rocks. Then, Mr. Sewell's section is a strange one to me. He shows his lode is stratified between the strata of lime. This is new to me. I have seen lime bear iron between lime layers. I have seen a lime lode turn off with the layer, and go for many fathoms, and it then goes into the lime again; but I never saw it go down as shown by Mr. Sewell. I give you the section of how they go on our side of the world. I have never seen a lode that worked otherwise than thirt the strata in some way. I may be wrong as to the law in the (so called) New World, as I have not seen the portion the section is said to be taken from. While on lime, I might go a little further, and ask him if he can measure the time his lime rock was forming by the fossils that it contains?

On this side of the world, our most learned professors met a few years ago at Bath, to decide on the age of the world. They generally agreed that it was an old thrown-by sun. I do not know if they decided whether it was worn out or not, but they tried an experiment on a 12-inch ball, at a white-heat, as to the time it took to cool down to 70°, and by it they decided the age of the world; and they came to the conclusion that it took from 90 to 100 millions of years to cool down to 70°, but I notice that that theory has been upset since, and they now say the earth is still at a white-heat at seven miles deep. All this is incomprehensible to me; still I think that Mr. Sewell might give me a hint as to the depth of his lime rock, and use the fossil for his guide as to its age, or time of formation. I will suppose the first fossil formed fell on or near the bottom; what will he set down its life or age at? The majority appear to have lived to their full age, and fell as they since came up. Then, I may ask him how many years were required to form all these fossils, or I might say his layer of lime rock? Mr. Sewell will bear in mind that lime preserved these shells, but that few of the layers formed after did so; and, then, I see no reason why the other layer was not as long forming as the lime was. Mr. Sewell may give us some useful information as to the time of his lime rock formation, and if the ore formed in his lodes, and came up with the formation of his rock, or if his lodes and ore formed since? Mr. Sewell's remarks on these points will be read with pleasure.

On Lodes in Limestone Formations, and their Dip. They are Treacherous to Purchase.



I may notice that not a lode never runs far with the strata—it crosses them. I never saw a lode in lime formation but it was unbottomed by a cross-head or a shale; they twist in every way, and get lost, or worthless. I may also notice that every well-formed lode passes to the thirt-heal, which most times unbottom and destroy them.—*Robin Hood Hotel, High Holborn.* N. ENNOR.

MEXICO, AND ITS MINES.

SIR,—The history of Mexico, from the moment when Cortez—a Spanish adventurer—bound its sovereign in chains, and degraded him in the eyes of his subjects, reflects no honour upon civilisation. How Spain treated this dependency, with its vast riches and resources, is only too well known. The annals of the emancipated colony, from the day on which it threw off the dominion of its European rulers, present one uniform tale of turbulence, anarchy, and bloodshed. The independence of Mexico was recognised by the principal Powers of Europe in the year 1821, but the existence of the Government as a Federal Republic was of short duration, and, from that period to the re-construction of the Empire under the sovereignty of Maximilian, the country passed through no less than 36 revolutions, and 72 different personages have successively held the chief executive office in the State. The unhappy fate of the last Emperor has again sunk Mexico into deeper trouble, anarchy, and confusion. The violation of every professed principle of honour and consistency under the *regime* of Juarez, in 1860, forbids the hope of progress by his instrumentality, and engenders distrust both at home and abroad in the loudly-proclaimed professions of that notorious chief about "The Constitution," "Reform," "Liberty of the Press," and so forth. Anarchy is again the chronic disease of the State, and it is impossible to foresee the day when the deplorable condition of the country will become amended. From the era of the conquest by Cortez the population steadily diminished. The future prosperity of Mexico must depend upon the reversal of this depopulating process, which has converted some of the finest districts into a wilderness. Few countries offer greater attractions to European emigrants. The climate, soil, and boundless mineral resources are all calculated to invite settlers. Situated half-way between the East and the West, and forming, as it were, a bridge over which the commerce of two vast continents will probably hereafter be conveyed, with an Atlantic seaboard of upwards of 1200 miles, and the Pacific washing 900 miles of its western coast, Mexico ought to become one of the most flourishing countries of the American continent. The United States were indebted for their marvellous progress and prosperity chiefly to immigration. It is a part of the American policy which Mexico will do well to imitate. China might supply an unlimited number of sturdy and industrious labourers, who would find in Mexico a much more favourable reception and better treatment than they have met with from the Anglo-Saxon race either in California or Australia, whilst Germany could send emigrants who would probably prefer Mexico to any other portion of the world should the country afford protection, under a sound administration to both life and property, and probably the German working classes combine more industry and intelligence than any other nation.

Mexico is wondrously productive of the life-sustaining elements of both man and beast, though its agricultural capacity is comparatively undeveloped, only about one-eighth portion of its land being under cultivation. Its population is scanty, and the people are inert and indifferent as to the future, to a degree incomprehensible to the hardy, ready, and industrious citizens of Europe. This wonderful field for agricultural and mineral industry will never attain its natural standard of power and wealth unless the natives become renovated, enriched, and enlightened, through the encouragement of emigration from the more hardy and sustaining surplus labourers of the colder climates.

The mineral produce of Mexico is remarkable, even when compared with that of the richest countries in the world. The annual silver coinage is about $20,000,000 (or, say, 4,000,000*l*. sterling), and the silver smuggled out of the country is estimated at $7,000,000 (about 1,400,000*l*.) in addition. A large portion of these amounts finds its way to England, and enables her to meet the demand for India and other quarters. Humboldt asserted that two-thirds of all the silver circulating in the world springs from the mines of Mexico. These mines, however, may be considered at present not only neglected, but really and substantially in a state of embryo, though labour and the application of capital are alone required to develope their established and unquestionable wealth. There are no geological surveys, and the richest district of Mexico (Sonora) is still almost a *terra incognita*. Humboldt gives expression to the prophecy that the time may not be far distant, and especially under sound and secure administration, when Europe may again, as in the sixteenth century, become inundated with silver. That the quantity hitherto produced may be tripled there can be no doubt, as all who are practically acquainted with the country give a far higher estimate of its capabilities.

Mining in Mexico is still being carried on in a very crude manner. Generally, whenever the water level is reached, the mines, no matter how rich and promising as regards the future, are abandoned, and others of a virgin character, and requiring time to open, are taken to by the natives, who prefer the chance of discovering shallow deposits of minerals to the more laborious and expensive, though probably tenfold more profitable, explorations through the aid of machinery in deep mines. Time and experience will remedy this state of things, and probably another half-century may find mining enterprise in Mexico carried on with all the improvements and aids of modern skill, the sciences, and the arts. The lodes are found at times so rich that it has been recorded that a single deposit, only 100 ft. long, produced in six months 432,274 lbs. troy of silver, valued at 1,000,000*l*. sterling. The great mine of La Luz, in the province of Guanaxuato, yielded annually for five years 1,000,000*l*. profits. There are upwards of 500 mines in Mexico, and between 3000 and 4000 silver veins have been discovered. One of these veins, in the State of Guanaxuato, was wrought to a great depth, and yielded returns and profits of a fabulous amount, when compared with the gains accruing from other industrial pursuits. The geological character of the strata differs in several districts, and presents many curious and interesting phenomena, and especially so to the practical and observant explorer of silver-producing regions. The great central plateau of Anahuac is composed of porphory, characterised by the constant presence of hornblende, and the almost entire absence of quartz. In other places the deposits occur in sienite. In Guanaxuato—probably the richest mineral district in Mexico—the ores lie in a formation of clay-slate, while in some places they are embedded in transition limestone. The only veins worked for gold are in Oazaco, where they traverse formations of gneiss and mica-slate. Many of the silver veins contain proportions of gold, which are separated from the silver by the well-known process in metallurgy called parting.

The subject is an interesting one, and from the data in my possession I shall shortly again return to it. R. TREDINNICK.

THE ROYALTY OF CORNISH MINES.

SIR,—To become a successful investor—nay, miner—one must possess knowledge, judgment, nerve, and money. Yet must the investor possess discernment, and be guided by data and the practical results of earnest study and experience. It is no use purchasing into St. Ives Consols, North Roskear, North and South Crofty, and such formerly prosperous companies, if the chances are lost, and the shareholders over a period of a quarter of a century have had to sink their capital for the sole advantage of landlords, merchants, and executives. Have either of these mines paid a single dividend since the year 1850? If not, should they not have been swamped among the prostrate successes of the past? We can all of us understand that the poor rates are low in Camborne and Illogan, and that land is benefited through the working of these, to shareholders, worthless concerns, but why should legitimate enterprise in opening up the young progressive mines have to contend in the labour market against these extended fields of employment that result in no advantage to investors? It would be a different case had the landlords ceased to receive their dues, and the executives submitted to a reduction of 25 per cent. on existing charges, and bestowed double services in favour of the employers. But the contrary is the fact, and not only are heavy dues paid, and the salaries large, but likewise the adventurers have had to submit to periodical calls. In fact, the routine of the old Cost-book System should, for the good of "One and All," be at once exploded.

Cook's Kitchen Mine worked for upwards of half-a-century without gains, although previously a very prosperous concern, and since then gave dividends of 11*l*. 11s. 9d. per share, on 19*l*. 14s. 9d. outlay, yet is now a calling mine. Can this be called a property? Again, South Frances, Trumpet Consols, Margaret, and Wheal Seton cannot be regarded otherwise than worked-out profitable concerns, and kept to work for advantages to the vested interests of the county, employing a large number of workmen, and consuming vast quantities of materials, machinery, and merchandise. If these mines, together with Great Vor, Botallack, Providence, Kitty (Uny Lelant), Devon Great Consols, South Carn Brea, South Condurrow, Burrow and Butson, the Grenvilles, East Basset, the Rosewarnes, North Pool, Rosewall Hill and Ransom, and Wheal Buller pay the shareholders nothing, then the dues ought to have long since been suspended, or, to say the least, reduced to one-hundredth part of the produce. If the landlords thus concede, mining adventure will receive an immediate and healthy impetus, and we shall soon find that the investing public will perceive the advantages of Cornish mining pursuits in preference to most other mediums for the employment of spare and floating capital.

There are many in this country who have money to spare, and who require excitement to spice the routine of daily life, and should the heavy imposts now imposed on Cornish mining be removed (or, to say the least, consistently reduced, there is that degree of speculative zest associated with it that will refresh the hereditary inheritant of wealth and the retired possessor of accumulated fortune to enlist in the pursuit of the hidden chambers of mineral deposits that abound in the Western Peninsula, and which at times astonish the public, while they enlist the greed of the adventurous and enterprising miner. There are vast fields still open for selection, and which posses the true features and elements of success, in many instances wholly, while in others they are only partially, explored and developed. Thus it becomes more evident daily that sound management and liberal landlords are alone required to command the necessary funds to work them effectively and prosperously.

32, *Fleet-street, E.C., Feb.* 18. R. TREDINNICK.

OBSERVATIONS ON MINING.

SIR,—No one can be more fully aware than myself that gratuitous advice, however salutary and appropriate it may be, is generally esteemed at its cost to those to whom it is tendered, which, I need scarcely say, amounts to nothing. I prefer, therefore, to make observations concerning errors which I conceive to exist in mining, and leave the inferences to be drawn by those whose interests are more immediately involved. Pertinent observations, when made through a legitimate channel, cannot fail of being effective in proportion to the importance of the matters dealt with, and the candour and disinterestedness of the sources whence they emanate.

The effects of the good or ill success of mining in the present day are not confined to those engaged in it, nor does it end with those by whose enterprise and capital it is carried on, but extends to every member, high or low, rich or poor, of every civilised community. The progress of civilisation in all countries depends upon mining—that is, if the progress of civilisation is marked or estimated by the progress and advancement of the arts and sciences, and assuredly it must be so marked and estimated. Agriculture claims precedence as a civilising industry to all others, but it is difficult to see upon what its assumption is founded. What would agriculture attain to unaided by mining, upon which the arts, sciences, and manufactures so entirely depend, to say nothing of the means of locomotion, of commerce, and national telegraphic intercommunication, by which the progress and advancement of mankind are so greatly accelerated, and upon which they so entirely depend? What would have been the state of mankind now but for these auxiliaries of enlightenment and progress? Or what would the state of the world be a hundred years hence if at once denuded of these accessories? The condition of mankind can only be conceived under such circumstances to be but a single step removed from absolute barbarism.

If this is not a fair conclusion of what the condition of mankind would be unaided by the arts and sciences, which entirely depend for their individual instrumentalities upon the products of mining, it must be because it too feebly sets forth that condition, and not because it exaggerates or distorts it. I claim justification for the foregoing remarks on the ground that mining to a large extent has come to be looked upon as a sort of wanton pursuit, persisted in as a diversion of a purely speculative character from the mere love of excitement which attaches to its "haphazard chances of success," it being regarded as a lottery in the estimation of thousands.

But, if recent revelations in the *Mining Journal* are at all to be relied upon as true, the general want of success cannot be as much a matter of chance as the natural sequence of indolence or incapacity, or both, on the part of agents. If such allegations are true, and they cannot be otherwise regarded, as they proceed from several independent sources, a state of things most deplorable is laid bare, but one that may be remedied. If the contract system, which has qualified the British working miner to compete with any nationality throughout the world, is counteracted and rendered abortive in its application to British mining by a tyrannical rule insidiously operated, and which utterly subverts the legitimate and beneficial effects which would otherwise follow the adoption of that system, it should at once be enquired into, so as to discover with whom the blame rests. If a certain number of shillings may be earned by each individual man per month, and no more, why enact the miserable farce of pretending to pay him so much per fathom, whilst it must be well known that such a pretence can only operate to afford the workmen a decent excuse for doing as little as possible for their money. It would be much more honest, as well as effective, to engage workmen by the day, as such an arrangement would most loudly call for the exercise of a constant supervision over the work-

men employed, as is always the case in American mines when carried on on daywork. The agents whose province it is to superintend such departments, if they are themselves judges of work, are cognisant of the amount of effective work executed daily by each individual workman, whilst by the sham contract system the agents are relieved from its critical supervision, on the assumption that if the men do not work they cannot earn, and that therefore they themselves are the only parties injuriously affected by their own indolence. It is needless to say that such an assumption is incompatible with the premises, and can only be correctly determined by the standard of valuation observed in the regulation of the prices to be given for the respective contracts in future. If the amount earned by the workmen on a preceding contract is to be the criterion of the price to be paid for the succeeding contract, then there can be no inducement to assiduous industry; as the amount of work the men have accomplished, and not what they might have, and under other circumstances would have, accomplished, is used as a fictitious standard of the value of work, by simply estimating the full nominal efficiency of manual power without taking care to secure its proper application. Besides, by such a "penny wise and pound foolish" method of conducting work an opportunity is afforded the men to indulge in a sort of special pleading in justification of the small amount done during the past four weeks, and for fabricating excuses, falsely attributing to natural circumstances and conditions unusual resistance opposed to their efforts—from hardness of ground, or cross-grain, or excessive wetness, or treacherous vughs, crevices in the rock, which nullifies the effect of powder by exploding it in vacuity. These and other things may be alleged in justification of the past, and as a criterion of the future. In the first place, as it respects any remedial measures, it is important to ascertain if such practices are general; and second, in the event of their being so, who is responsible; to whose door can such infatuation be traced. The more the men earn by a fair system of contracts, whether from favourable changes in the ground to be operated, subsequently occuring, or by superior skill of the operators themselves, aided by the most dilligent application thereof, or all three of such contributories combined, the better it is for the adventurers, as well as for the men themselves, as the former will always have the satisfaction of knowing that an equivalent in value of effective work—always provided it has been properly directed—has been rendered for the amount paid for it.

The question as to the amount of men's earnings, provided a proper contract system has been observed—however much individual men or individual mines may exceed the average of the *sham* contract system—is not that which militates against economy in mining, but rather that which promotes it, and without which its maximum success cannot be attained.

Speaking of myself, as an agent of many more than 20 years standing, I am happy to say that no company with whom I have ever been connected made it incumbent upon me to limit men's earnings to so much per month, or ever enquired why one sett, or company of men, earned more on an average than another, nor do I ever remember being interrogated at any adventurers' meeting I have officially attended regarding the matter; although I am quite sure that the men in the mines under my supervision earned as much, or more, than they did in other mines in the same localities; and, therefore, if I had adopted such a course it would have been my own act and arbitrary proceeding, altogether independent of any instructions or coercion by my employers. I had no intention when commencing this letter of touching upon the question of *sham* contracts, but the idea occurred to me, *en passant*, and I entertained it, and hence my apology, if apology be needed, for this, as well as for another communication on the subject, either next week or the week after, according as time and inclination may favour me for writing it.

Llanrwst, Feb. 18. ROBT. KNAPP.

MINE PAYMENTS—LUNAR OR CALENDAR MONTHS.

SIR,—The letter in the Supplement to last week's Journal, from "A Mine Purser," of Truro, as well as other letters from large shareholders in Cornish mines, deserve particular attention, considering the great depression the mining interest is at present labouring under. With respect to lunar or calendar months' pay to labourers, from long experience in mining adventures, I am fully persuaded the former system is a bad one, a mere decoy duck to the labourers, and no advantage to steady men, as it affords one more "mad" Monday, or what is locally termed in Cornwall in former days "mazed" Monday, to idle men. It is true the pursers of mines and other agents get 13 months pay instead of 12, as formerly, but it gives more or additional labour. Economy in future must be the order of the day. Old, expensive, and deep mines feel every incumbrance severely, and little or nothing is heard of but "Stop the Mine." The shareholders, except those interested in the supplies to mines, are exhausted by heavy calls continually making. Mines in future must be worked to meet the competition of foreign supplies, or mining in England is at an end. The dues or royalty being absurdly high drive the capital and industry out of the country, which fact is beyond a doubt by the great supplies of tin and copper from distant parts of the world continually arriving now daily. A vast number of the mining setts or grants are still in their infancy, and doubtless will remain so until more liberality is shown by the owners of land, many of whom know nothing about the great distress now existing in Devon and Cornwall, but ere long these gentlemen will get no royalty or dues, then probably they will enquire the cause, and discover the error when too late. It is said it is too late to shut the stable door when the steed is gone.

More encouragement should be given gentlemen who risk their capital to discover new mines, and unless such is done mining in the West of England will soon be of the past, and Cornwall forgotten as a mineral-producing county. The Press seems to be the only channel to make the facts known to such land proprietors who are absent from the seat of operations, and do not venture in mines themselves, and the stewards do not like to state the truth, being themselves too narrow minded. The result of the recent elections proves that to encourage labour has been the secret of success in returning several members to Parliament. Now, the ballot is the order of the day. In several constituencies men must vote, they say, for such gentlemen who encourage employment, which the writer of this letter heard repeatedly stated in visiting various places during the elections.

If the new Government would put an export duty on coal, and take off the duty from malt, and repeal the income tax, a free breakfast table might also be enjoyed. The profits on coal must be enormous. I well remember when 4*s.* per ton paid all charges delivered at the pit's mouth; 5*s.* per ton might be imposed on the profits and exports of coals. From the high price of coals manufacturing of various articles may be said to be at a dead-lock.

Camborne, Feb. 16. A SHAREHOLDER IN SEVERAL MINES.

MINERS' PAY—THE FIVE-WEEKS SYSTEM.

SIR,—I observe from a correspondence in your paper on miners' pay, that one of the contributors—who has treated the whole subject in a most exhaustive manner—points out in an especial degree the amount of confusion that arises from having a fixed date for sales, and a variable date for pays. The ordinary shareholder may be excused certainly for not understanding accounts made up on this principle, but it cannot give him much satisfaction to know that others are as much in the dark as himself, or that the new system which makes this state of things possible is comparatively so disproportionate in value, even when it is credited with the full amount claimed for it, with that system which it has supplanted. How this new form of pay could have crept in is a puzzle to many, and if it can be disposed of as easily it will be a great cause of satisfaction to the mining interest generally.

Cornhill. AUDITOR.

MINERS' PAY—THE FIVE-WEEKS SYSTEM.

SIR,—As an investor in mining property I quite sympathise with the letters which appeared in last week's Journal. I cordially approve of the movement advised to do away with a system of pay, rightly designated obnoxious by one of your correspondents, for the many reasons justly advanced against it; therefore, I trust the matter will not be allowed to rest, but that shareholders generally who have a regard for their mining interests will resolve upon its relinquishment, and that the old principle of pay be again adopted. As the innovation of the 13 pays was permitted, and has been tolerated thus far, the proposal to compute them into 12, or calendar, monthly payments, is the proper course to be pursued for a friendly settlement of the question, which should be both spontaneously and willingly accepted by the miners at large.

I shall be willing to give my adhesion to join in any combination, if necessary, to effect the desired change.—*Pall Mall, Feb.* 19. A SHAREHOLDER.

SOUTH CONDURROW.

SIR,—Until lately the South Condurrow agents have made a practice in their reports to give the amount of tin sold, and the quantity or approximate amount of tin in stock, giving the outside shareholders an idea, by the simple means of addition and substraction, of the amount of tin raised from time to time. Lately, however, this has been entirely avoided, so that we can form no idea as to the present returns of the mine. If the agents are indisposed to attend to this, it may be good policy for the committee at their next meeting to take the matter into their earnest consideration. Should this, however, meet the eye of the secretary, perhaps he will kindly oblige by obtaining the amount of tin raised and sold since the last meeting, and to insert the same in the next report. It will be rather interesting to me then to find out the difference made to the company in stacking their tin the last four months, instead of selling fortnightly. This, however, may be an error in judgment, still it can be no excuse for the non insertion of what I ask.

In conclusion, I cannot help thinking, even with the present prices, a mine selling the quantity of tin as South Condurrow has been doing, with economic management, ought to be paying dividends, and this I know is shown us by many who know more of mining than— A SOUTH CONDURROW SHAREHOLDER.

HALKIN MOUNTAIN—SOUTH PRINCE PATRICK MINE.

SIR,—The gentleman who in last week's Journal signed himself as "One who knows Halkin" is not quite correct in saying that the Westminster vein runs through the south of the above mine.

There are seven lead veins running east and west through the sett, as marked on the Government Geological Map, but the most southerly is the Union, or Old Rake Vein, which where worked has yielded enormous quantities of ore, and "has proved itself one of the richest veins on Halkin Mountain." The unworked portion of it in this sett will have attention soon.

Having an interest in the mine, I went a fortnight ago to have a look at it. There were splendid lumps of ore, weighing up to 6 or 7 cwt. each, lying on the bank, which were got from the north and south lode, or Parry's Flat, as it is called, the same flat out of which the Prince Patrick is now getting great quantities of ore. My attention was called to a vein recently discovered in an excavation made for chert stones, containing carbonate of lead; since then a shaft has been commenced on it, and promises well. There are other highly desirable points of operation on known veins in the sett, which can be conducted at a very moderate cost, and will not, I hope, be neglected when the season is more advanced.

There is neither pumping nor crushing machinery required, which saves great expense. I was very much gratified with what I saw. They have since sold 20 tons of ore. I do not know the district so well as the gentleman who wrote last week, but I do know that the neighbourhood of Holywell, south, east, and west, abounds in lead, and it is true that millions sterling in profits have been made there. A LARGE SHAREHOLDER.

MAUGHOLD HEAD MINING COMPANY.

SIR,—What Polyphemus of evil can have been at work to blast the fair operation of this mine. At the meeting, held in the Isle of Man in August last, a good deal of *couleur de rose* was thrown into the matter by the various speakers, leading holders to expect at least 15 per cent. return about or near to this time; and yet, practically, they were then quite insolvent, and ought not to have gone on. In fact, the board ought never to have allotted, and if they had been experienced men would never have done so. Up to Christmas those not behind the scenes imagined things were working smoothly, when behold! in the early part of January (and this after the board had the imprudence to make a call, which was paid by many) a circular is issued, alluding to pecuniary difficulties and a possible wind-up. The solicitor, at the meeting, on the 10th inst., in speaking of certain acts of hostile creditors, spoke of there being a good answer made to their opposition at the hearing of the petition last Saturday; but, lo, and behold! a public defence is raised, the petitioning creditors gain the ear of the Court, and the result is a compulsory winding-up. It seems to me a great pity that a good mineral property should be directed by a board of insufficient means and influence. I suppose the upshot will be that the whole of the 2*l.* per share will be dragged from the pockets of disgusted shareholders, and the lawyers, accountants, advertising agents, and other parasites be the better for the operation. Heaven knows how difficult it is to place any confidence in anything that is brought out, for commercial morality is so microscopic that it is well nigh impossible even to believe anyone on their oaths.

Feb. 17. HEMATITE.

GUNNISLAKE (CLITTERS) MINE.

SIR,—In the Mining Notabilia of last week some croaker has been referring to this mine, and says it has happened as he predicted—the cross-course in the bottom end has cut off the ore. What does he mean by the bottom end? Does he mean the end of the shaft downward, for, strictly speaking, that is the bottom end; or does he mean the end of the 164, going east or going west? I will just ask this vaticinator, according to his own imagination, if a cross-course does not for a time cut off the ore in any lode? It happened so in Devon Great Consols. The cross-course there not only cut off the ore, but, if I mistake not, hove the lode, immense as it was, some 80 fathoms out of the direct course. But they ultimately found the lode on the eastern side of the cross-course much richer, and the ore in greater abundance, than it was on the western side of the said cross-course. The secret of the wonderful productiveness of the South Caradon lodes is their being so frequently intersected by cross-courses, almost precisely similar in character to those found in Clitters—decomposed granite.

But, Sir, a day or two after reading this twaddle of your correspondent I called at the mine, and had a quiet chat with the excellent resident agent, who is also one of the principal proprietors, and who had just come up from underground. I was pleased to find him with a face as placid as a rainbow, and on my asking him if the ore was all gone, "He laughed, he did," as Artemus Ward would say, "all over his face."

As to sinking, as there is a lode for many fathoms in length gone down, worth from 50*l.* to 100*l.* per fathom, and as the ore is gradually lengthening east and west; as we are just about the same level under the Tamar at which such splendid discoveries were made in the Gunnislake Mine, and which was the foundation of the now almost fabulous wealth of the Messrs. Williams; as the ground is much easier for sinking, and the country much more congenial for the production of mineral, certainly the shaft will have to go down, and the pumps—oh, horror!—will have to be dropped likewise. Seriously, from what I can gather, the mine, on the whole, scarcely ever looked so well and promising as it does at present; and if the standard does not drop too low, I see no reason to alter the opinion I have once before expressed, that Clitters ought in this present year to resume its proper place with Wheal Russell among the dividend-paying mines. I would advise your correspondent to go out of mining. He seems to be a man without either faith or hope, and mining has enough to bear at present without having to listen to such miserable comforters as he. If he will put his shares in Clitters into the hands of Mr. B. Horsewill, of Tavistock, for sale, I will try if I can relieve him of their burden. M.

BENSBERG LEAD MINING AND SMELTING COMPANY.

SIR,—I was glad to find, from a letter in last week's Journal, that some parties interested in this mine had begun to think it time that certain enquiries should be made into the company's affairs as well as myself. I, with others, have doubtless taken the trouble to read the somewhat lengthy "special report" of the newly-appointed manager, and cannot but be struck with dismay at its meagreness: he, in conclusion, however, after enumerating the various casualties that had taken place, laying special stress on the fact that they all occurred prior to his arrival, has told us that "he thinks" after the mine has been properly developed it will prove a great and lasting concern. Well, it is not to be wondered at, for, having made enquiries as to who and what he was, I can only learn that he for a few months managed a tin mine in Cornwall; but how he found his way to Bensberg, and his qualifications for the position of manager to our property, should be explained by those who appointed him. THOS. WILLIAMS.

Strand, London, Feb. 18.

[For remainder of Original Correspondence, see to-day's Journal.]

PRACTICAL MINING—THE EXPLORERS', MINERS', AND METALLURGISTS' COMPANION.*

The second edition of Mr. Phillips's volume bearing the above title has just been issued, and shows much improvement in both printing and illustration, while the few inaccuracies which escaped in the first edition appear to have been carefully corrected. The author remarks with much truth that no subject can be selected where a really practical book is so much needed as in the varied field of mining for the assistance of those who may not be educated in the numerous manipulations appertaining thereto, for more general practice in the several trades and professions is required in the development of mines than for any other business. The greatest mistakes of American mining have, he says, been caused for want of ordinary prudence in this comparatively new and most difficult occupation; more particularly, by commencing too much afresh, and inventing worthless machines and processes, or re-inventing such as had been tried in older countries and abandoned. Instead of profiting by men having the experience of past ages, worthy legitimate practicals have been treated with indifference, whilst interloping clean fingered theorists have been unduly favoured, who having discarded real mining from deficiency of skill in that department, have played recklessly with new ideas of metallurgy, or worked prematurely where insufficient mineral existed, and far too often not only wasted your last dollar but inflicted on mining severe retardation. It may be loudly reiterated for everlasting advantage that reduction works should not precede but succeed the discovery, and exposition by mining of sufficiently rich and extensive deposits of mineral for positive realisation of profits. If you have no corn (or mineral), why the mill? First obtain the grain, then grind into flour.

The chapters on the comportment peculiarities and indicative features of mineral veins are derived from long observation, and it is hoped that they may afford some records of value to the amateur, and be interesting to every class of thoughtful miners. The section on exploration, the miner's first and most important duty, which governs after success or ruin, have been as carefully considered and safely advised. The section on the discrimination and assay of minerals has been kept as free from formulæ as possible, and it not only contains the best of the old modes, but many novel and more available methods for practical men: so that when the one facility is absent another will be found present, to suit all the requirements of the mine, the roasting furnace, the mill, the smelting and chloridation works, and the mountain; whilst in that for the strictly commercial purpose the more direct, less mystified, and least dangerous means and fluxes have been selected. In mining and engineering the best plans of operation and machines have been extolled, and the most common errors of the past exposed as beacons for avoidance. In the metallurgy of the volume just sufficient has been selected from the most valuable and best established processes for rendering the ores of remote countries more marketable by crushing, pulverising, roasting, milling, smelting, refining, chloridising, and chemical reductions. An appendix has been added, giving the general mining laws of the United States of America, which will be found convenient for reference before claims are located or patented. It also contains several useful tables of specific gravities, weights, and strengths of materials, and two new amateur's methods for the more effective qualitative analysis of the useful minerals, and the actual assay of silver ores, or concentrated gold quartz, by the ordinary blow-pipe.

The method for the discrimination of the useful and profitable minerals, and intended for practical men, described in the fifth chapter of the book, will prove of great utility, as the examination can be made by those who have no other tools than can be found in and around all prospectors' and miners' camps. He first explains the mode of examining the vein, and gives ample particulars, to enable the reader to distinguish quartz from fluor-spar, and these from the various carbonates. The separate discrimination of antimony, arsenic, and sulphur when in combination is then explained, and the mode of examining for the presence, quality, and percentage of the combustible elements of coals; whilst next he gives the method of making a general examination for all of the useful and profitable metallic minerals, to ascertain their presence and approximate percentages of metals. In commencing the sixth chapter he gives some very useful hints for judging of the hardness of minerals, remarking that in the discrimination of minerals it is sometimes very important to ascertain by comparison their hardness, and the following list of ordinary and well-known materials were first suggested by Mr. Chapman, as a scale of hardness which will be found most convenient for practical men. A mineral whose hardness is—

1.—Yields *easily* to the nail.
2.—Yields *with difficulty* to the nail, or merely receives an *impression* from it. Does *not* scratch copper.
3.—*Scratches* copper, and being equally hard is *scratched by* it.
4.—*Not* scratched by copper; does *not* scratch glass.
5.—Scratches glass *with difficulty*, leaving its powder on it. Yields to the knife.
6.—Scratches glass *easily*. Yields *with difficulty* to the knife.
7.—Does *not* yield to the knife. Yields *with difficulty* to the edge of a file.
8, 9, 10.—Harder than flint.

In other respects the information given is of an equally practical and readily applied character, so that with no other works of reference within reach the miner or explorer need not fear being at a loss in the most uncivilised mineral district; he will be readily enabled to judge (even assuming his previous experience to have been confined entirely to the mine) whether there be anything worthy of further consideration, and what are the prospects of success. The volume is much improved as compared with the first edition, and will, no doubt, be as extensively circulated. The book is really entitled to become that which it aspires to—the Explorers', Miners', and Metallurgists' Companion,—and will certainly prove a companion of great utility.

* Published by the author, J. S. PHILLIPS, M.E., Washington-street, San Francisco. Price 2*l.* 2*s.*

Meetings of Public Companies.

MAMMOTH COPPEROPOLIS OF UTAH (LIMITED).

A special meeting of shareholders was held at the Cannon-street Hotel, on Tuesday, for the purpose of authorising the creation and issue of 2000 shares of 10*l.* each,

Lord CLAUD HAMILTON in the chair.

The SECRETARY having read the notice convening the meeting,

The CHAIRMAN said he had a bad cold, and had just returned from contesting a large Irish county, in which he had not been successful; and he really had not had time to go over the various papers, or to make himself acquainted with the number of recent statements and letters which had an important bearing on the interests and prospects of the company. While acknowledging his inefficiency fully to occupy the position he had the honour to hold as Chairman, he was happy to state that all his inefficiency would be made up by the deputy-chairman, Mr. Elliott. He was also happy to be able to state that Dr. Bishop, the only member of the board who had visited the mine, and who was well qualified, from his scientific knowledge, to give an opinion, was present, and would be able to give the full information which his well-stored mind would enable him to afford. He hoped they would excuse him if he did not address them at any great length; in fact, the circular which had been sent to the shareholders gave historically the whole narrative of the origin and progress of the mine, and it was a very clear and lengthy document. That document was drawn up, however, rather hastily, and there was a slight error in the last paragraph, with regard to the statement quoted on the authority of Dr. Bishop. The $40 per ton which he adverted to was with reference to gold, and not copper. He made that statement in order to prevent confusion. Of course, they were all aware that mining properties in America had gone through very rapid phases; not very long ago most extravagant ideas were formed respecting them, and they were considered as a most hopeful and favourable investment. Adverse circumstances occurred, many failures took place, and the opinions of the public respecting mining speculations in America had undergone a revulsion—they had fallen in public estimation. He was happy to say that, although they had had their share of disappointment, nothing had occurred in the slightest degree to shake their confidence in the value of the property, or in the certainty of vast and beneficial results coming from the working of it. They had had the misfortune to meet with a peculiar time; such a panic had taken place as had hardly ever been known before in New York. The effects of the panic were felt still more severely in Utah, and they had remained much longer, and this was what brought the directors before the shareholders to-day, in order to get their sanction to raise further money. The panic was so intense, and the want of bullion was felt so much, that they could not obtain advances on silver and copper. There was no means of paying the ordinary daily wages, and the result was a virtual stoppage of their works. That caused great inconvenience, and brought them to an undoubted pecuniary difficulty. To exemplify that, they had a quantity of copper ore which had been reduced to a form in which they could sell it readily, and at the time the panic came upon them it was worth 28½ cents per lb.; the operation of that panic was that in a very short time they were glad to get 14 cents, making in 60 tons about $16,000 loss. He only gave that as a specimen, to show the utter impossibility of carrying on any ordinary financial operation. He must admit, and he did not wish to hide it from the shareholders, that the board had been unfortunate in the management of the affairs of the company. (Hear, hear.) It was a very difficult thing for any board to manage affairs, and look closely after them, situated at such a distance as a mine in Utah was. All they could do was to endeavour to get men of character, education, and scientific knowledge to undertake the work, and lay down such rules and regulations as would, to the best of their belief, ensure satisfactory management. They had not been fortunate in the selection of the gentleman to whom they committed that management, and there was nobody more ready than the manager himself to acknowledge his own failures, and to express the deep disappointment that the present results had occasioned him. There had been no attempt to conceal anything, but he had been long requesting to be withdrawn and to have a successor substituted. At this moment the directors were anxiously looking out for a person who would be competent to undertake and hold the position of their manager there. While he was obliged to say that their present manager had not succeeded, he wished also to state that the board had the highest opinion of his integrity, diligence, and good intention, but he had not found himself equal to the multifarious and varied difficulties connected with the duties he had undertook to discharge, and he had amply acknowledged that, and requested that someone might be put in his place. The result was the directors were endeavouring, and were in communication with Messrs. John and Richard Taylor, a house of considerable eminence, to see if they could not secure the services of one who would be able to put the company in a better position. The real purport of the meeting was to obtain the consent of the shareholders to the issue of debentures. The directors had power already to do that, but behind that they would see in the last paragraph but one of the circular they required the sanction of a general meeting to give them power to issue 2000 additional shares. Anyone who had read the original prospectus would be aware that they were limited to the issue of 15,000 shares, and, therefore, it required the sanction of such a meeting as this to increase that number; and the object of increasing that number was simply this—that many gentlemen who were willing to assist the company by taking debentures wished to have the power when they so elected of converting these debentures into shares at their own option, and the same understanding was come to with regard to the former debentureholders. Those being the real objects of the meeting, he did not think he need trouble them any further, because he had told them that on either side of him he had a director ready to give the most ample and accurate information respecting the mine. He would, therefore, conclude by moving the special resolution which it was proposed to submit for the sanction of the shareholders.—"That the present nominal capital of the Mammoth Copperopolis of Utah of 150,000*l.*, divided into 15,000 shares of 10*l.* each, be increased to the nominal capital of 170,000*l.*, by the addition thereto of the sum of 20,000*l.*, divided into 2000 shares of 10*l.* each, and that such additional capital shall form part of the original capital, in the manner and the form pointed out by the Articles of Association of the company."

Mr. JOHN ELLIOTT seconded the motion. His lordship had stated that the motive for the issue of these additional shares was simply for the purpose of enabling the directors to gratify the wish of many of those who wished to subscribe for debentures, that they might have a permanent investment in the future, instead of a mere temporary one. To meet that view it was decided to issue these extra shares. By the Articles of Association the directors had power to issue the proposed amount of debentures, and therefore the consent of the shareholders was not required, but the directors would never have availed themselves of the power without consulting the shareholders, because they always felt that they were trustees, and bound to consult the persons whom they represented. The resolution was simply a form in aid of the proposed issue of debentures which they came here to-day to ask the shareholders to subscribe, and in asking them to subscribe he thought it was only fair to state why it was proposed that should be done. A circular had been sent out, stating the circumstances which rendered it not a matter of choice, but of imperative and urgent necessity. It was stated in that circular that the present state of things came upon the board by surprise. They failed in obtaining proper accounts and statements for a considerable time, notwithstanding the imperative demands which had been sent out both by letter and by cable. That excessive neglect in the delay in sending advices he could not but attribute to the manager, who, under the pressure of circumstances, doubtless, had not the courage to send home the real facts, because he had led the board to believe that by this time they would be in receipt of large sums of money, and, in fact, they confidently believed they would be in a position to re-commence paying dividends; such were their anticipations of the prospects of the mine. The board had had an anxious time for the last 15 or 18 months. When the company was originally formed he had an interview with Mr. Fowler, and that gentleman convinced him that he himself honestly believed in the statements put forth. Facts were stronger than words, and he (Mr. Elliott) could only say that he commenced almost immediately to add to his original stake, and he had been purchasing shares in the company up to within the last few weeks, and now held ten times the amount he originally held. He had also put his family in the company, and his lordship had done the same. It was not two months ago that his lordship bought his last lot of shares, and, therefore, he thought that that gave the strongest possible proof of his firm belief in the mine. That belief was unshaken, for he believed they had one of the finest properties in Utah if properly handled, and the subscription they asked for would relieve them of all future difficulties. The prospectus held out most enormous promises, and if those promises had been literally fulfilled it would have been one of the cheapest mines ever placed on the English market. The directors had not the slightest idea of anything being paid for the mine except what was in the agreement. It might be considered that if a mine produced 130,000*l.* year 125,000*l.* was a small price to pay for it; but it was a fact in the history of mines that many of the most valuable had been bought for a mere song. If time permitted he could bring forth case after case where a few hundred dollars had been multiplied into hundreds of thousands of pounds through subsequent discoveries. So far as the directors were concerned, they went into the company in the honest belief that the promises of the prospectus would be fulfilled. Those promises had not yet been fulfilled, but if they were to believe the subsequent examinations of Mr. Fowler and Prof. Clayton, one of the most cautious men in Utah, a man who did not give his opinion lightly, then they did not give too much for the mine. The subsequent examination of their friend Dr. Bishop, who was deputed to go and search into everything, told them the exact facts, and if Dr. Bishop's statements were to be believed then they had a cheap bargain in the Mammoth. Such was the opinion in the district, and they had, in fact, been subjected to a very se-

vere attack in a Utah paper, founded on the belief of the editor that large quantities of bullion had been sent from the mine to England, and that while they had been making large profits they had left the men unpaid. That would have been a gross thing to do if true, but it was not true, because every shilling of the proceeds had been left there to be spent on the property in its development, and they had one of the strongest proofs as regarded the value of the mine from the conduct of the men, for they stayed there working for three months without wages, as the directors now found out, and he would ask whether it was possible that the men would have done that unless they had believed they were working on a property which would be in a position to afford them the means of payment? At the time when Mr. Fowler examined the mine there was a large mass of copper ore open, and his description of it proves he could not describe it in any other way than as a great fairy grotto; such an immense mass of copper was perfectly dazzling. He had no doubt Mr. Fowler's description was true, for the specimens had quite corroborated all he had said. The engineer of the Burra Burra came to the office and saw the specimens. The Burra Burra had returned almost a thousandfold its original cost, and one of the proprietors got 60,000*l.* a year on the outlay of a few hundred pounds. The engineer said the specimens were the exact counterpart of the Burra Burra, and therefore there was the fullest ground for believing that something out of the ordinary way had fallen into their hands. Although American mines were looked upon with suspicion, and many had been bought over here with the deliberate attempt to deceive the British capitalist, many mines in America were surpassing the most sanguine expectations that had been formed of them. He took up an account from Wells Fargo, and they had passed through their hands this last year bullion from some dozen mines in America to the extent of $72,000,000. Those were unheard of results.

Dr. BISHOP said he had visited the mines frequently, and he believed that the company had a most valuable property.

Mr. SPRATT also expressed his belief in the value of the property, and that it would return handsome dividends to the shareholders.

After a few further remarks the motion was put to the meeting and carried.

A vote of thanks to the Chairman and directors closed the proceedings.

UTAH SILVER-LEAD MINING COMPANY.

An extraordinary general meeting of shareholders was held at the offices, Austinfriars, on Tuesday, for the purpose of passing the necessary resolutions making a call of 10s. per share upon all the members of the said company, in respect of shares held by them,

Mr. GEORGE BATTERS in the chair.

Mr. W. J. LAVINGTON (the secretary) read the notice convening the meeting.

The CHAIRMAN said the object of the present meeting was to authorise the directors to make a call of 10s. per share, making the shares fully paid-up. Since the previous call was made the dressing machinery had been completed, and a telegram received from their manager, Mr. Longmaid, dated Feb. 2, states—"Trial most satisfactory; estimate daily, 80 tons, producing 70 per cent. lead and 16 ozs. silver per ton." The present company was started with the view of simply dressing the ore, and either selling it in America or sending it to England. From all the enquiries the directors had made there seemed no reason to recommend any alteration in the original programme, and it would appear that practical results would be known at a very early date. The funds had been called up as rapidly as the convenience of the shareholders would admit, and no doubt it would have been much better if the funds could have been called up more rapidly, and Mr. Longmaid supplied with money as he wanted it; such, however, was not in the power of the board. Mr. Longmaid requires 5000*l.*, which did not seem an unreasonable amount, and especially if he is able to return 500 tons per month. Mr. Longmaid says, in this letter, that they will have to work a great portion of the year night and day, and that instead of returning 20 tons of dressed ore per day they ought to produce a considerably larger quantity—possibly 50 per cent. more; but even with 500 tons per month, yielding 70 per cent. of lead and 16 ounces of silver, the returns would be as large or larger than the richest mine in this country. That there was an ample supply of ore to keep up this output was confirmed by Mr. Longmaid, who states that there is a very large quantity of ore discovered, and that he is perfectly satisfied he can keep up these returns. Up to the present time Mr. Longmaid had spent very little upon opening up the mine, but such little had proved that development only was required to lay open additional sources of supply. They had received a telegram from Mr. Longmaid to the effect that Mr. Bateman, the largest shareholder, had paid his call of 960*l.* The dressed ore would realise in this country about 16*l.* per ton, and after deducting mining expenses, freight, &c., it was estimated there would be a profit of 4*l.* per ton—that would give a very handsome dividend. The total indebtedness in this country was 500*l.*; the call now proposed to be made would realise 6731*l.*, and there was cash in hand and uncollected calls amounting to 1500*l.*; so that there would be something like 7700*l.*, while their manager asked for 5000*l.* The latest accounts from the mine states the debt there to be 1000*l.* The letter bears date Jan. 25, and states—

At the end of this month we shall owe at least 2000*l.* for machinery, materials, wages, &c., and no money in hand, and no prospect, it appears, of receiving any. Under these circumstances I am to commence shipping 400 or 500 tons of ore per month; and, still worse, the weather may prevent our starting for a month or more, and so add 400*l.* or 500*l.* more to our debts before we can begin to dress. That more money will be required is certain, and the longer we drag on without the more will be ultimately required. We ought to buy a quantity of bags now. By giving a month's notice and paying cash we can get them cheap; but, as we cannot do that, we must from day to day, of the small traders, take inferior goods and pay much more for them. We shall require 500*l.* worth per month, or nearly double if we work night and day, which we ought to do. During three months we shall have abundance of water, and ought to work night and day. If the weather should become mild, I will at once commence dressing. We could work for a week without the buddles, and by that time they would be completed. The only thing remaining to be done that is absolutely necessary is to fix the piece of steam-pipe to connect the boiler with the engines, and that can be done in an hour after it arrives. Hoping shortly you will make some arrangements to enable us to commence dressing.

He then proposed that a call of 10s. per share be made, payable at the Alliance Bank on or before March 2.

Mr. JOHN CARR seconded the proposition.

A SHAREHOLDER understood the deputy-chairman at the last meeting to say that it was not likely any further call would be necessary.

Mr. WILSON complained that since the call of 1*l.* per share was made no financial statement had been issued to the shareholders.

The CHAIRMAN said the board knew tolerably well how the money had been expended, and the reason the shareholders had not had a balance-sheet was simply because the date of the annual meeting had not yet arrived. Mr. Longmaid had the perfect confidence of the board, and they had no reason whatever to doubt the statement which Mr. Longmaid has made as to the ultimate results. Utah had passed through a fearful state of panic, which had adversely affected all mining operations; but the machinery had been erected, and it had been proved the ore could be dressed; and, according to Mr. Longmaid's statements, by the application of the unexpended capital the apparent result would be a profit of 25,000*l.* per year. Mr. Longmaid had written most plainly and in an outspoken manner, and had never deceived the board, except so far as they had deceived themselves in hoping they could do with less capital than had been absolutely necessary.

A SHAREHOLDER asked what amount the last call realised?——The SECRETARY: The sum of 6500*l.*

Mr. WILSON said as the Chairman had informed them that the board had the fullest confidence in Mr. Longmaid, and that the results were likely to be satisfactory. It was to the interest of the shareholders to support the proposition before the meeting.

Mr. APPLEGARTH (a director) said that before Mr. Longmaid commenced to put up the dressing-floors one buddle was erected to dress the ore upon a small scale, when it was found it would dress satisfactorily. Mr. Bateman insisted upon that before he allowed Mr. Longmaid to commence the erection of the dressing-floors. Mr. Longmaid found the ore quite susceptible of being dressed in a satisfactory manner.

A SHAREHOLDER suggested that a report should be sent to the *Mining Journal* once a month.

Mr. LAVINGTON said that Mr. Longmaid had been asked to send a monthly report, and had promised to do so as soon as the dressing machinery had been got fully to work.

Mr. DELFANCO suggested that the call should not exceed 5s. per share, for they had already expended 28,000*l.*, and there was nothing to show for it.

A SHAREHOLDER proposed that the remainder of the shares should be issued, and shares upon which the calls had not been paid should be at once forfeited.

The CHAIRMAN said that if that were the feeling of the meeting action would be taken forthwith.

The Rev. Mr. PROBERT said that he was a holder of 100 shares, and a great many of them had cost him 11*l.*, and he would not pay another sixpence unless compelled by law. Mr. Longmaid, whom he met at the mine, was a very able, zealous, and competent man, but he had been entirely misled by the directors: they had saddled him with responsibilities by giving a *carte blanche* to expend 5000*l.*, without giving him enough money to carry the machinery up to the works. When they sent out Mr. Nancarrow he sent home a very glowing report, Mr. Murphy had proved an unprofitable servant, and there was also Mr. Henry Sewell. He (Mr. Probert) did not know any of those gentlemen, but he knew that he should not like to back their words. Whatever Mr. Bateman told Mr. Nancarrow, Mr. Nancarrow told the shareholders.

The CHAIRMAN: You are making statements that are totally untenable and untrue.

Mr. PROBERT said his position was hostile to the Chairman, because he felt he had been fooled. The board had been guilty of gross negligence—no person would have employed Mr. Murphy, who was so well known out there: his expenditure was supposed to be checked by the secretary in Utah, and he could not draw money without his authority, but, notwithstanding this, Mr. Murphy managed to draw from 11,000*l.* to 12,000*l.* He (Mr. Probert) had formed a high opinion of Mr. Longmaid, but a more cruel thing was never done than to send him out under such circumstances. He (Mr. Probert) had been told he had been much misled by the directors as to the quantity of water with which to work the machinery, and that in consequence of the water not being there the round buddles would be found useless. Mr. Longmaid had done his best for the shareholders, but Mr. Bateman, who was supposed to be the resident director, did not reside within 1000 miles of the property. He (Mr. Probert) claimed to speak with some authority upon metallurgy, and he told Mr. Bateman that he had found in the property that which others had overlooked; he was afraid to go fully into the matter, because he had no confidence in Mr. Bateman. As to the plan of close dressing, he could tell them that by dressing out the lead closely they lost four-fifths of the silver contents of the ore. It was known to every metallurgist that when he tried to dress closely the most valuable part of the lode was lost, if it were silver-bearing. They did have a very good furnace, in which he would have undertaken to have smelted 30 tons of ore per day without difficulty, but that had been removed; he had no hesitation in saying that they had a better property then than now. The fact was, the company never had a metallurgist at the mine, or anyone who knew anything about it; he thought Mr. Longmaid a very competent man, but he could not say anything more about him. The ore was poor, and required very careful treatment to make any profit whatever, but the mine contained good fluxing matter—iron pyrites—which yielded 15 to 16 ozs. of silver and gold per ton—in fact, the property had the finest flux in the world for the treatment of galena containing silver and gold. He (Mr. Probert) wanted that left furnace to test the ore at his own expense. If the shareholders asked him what was now to be done, he should say the first thing would be to pay their debts, but if they allowed the directors the money it would all go, and there would be nothing to show for it; had Mr. Longmaid been provided with even 4000*l.* at the proper time the company would have saved 4000*l.*, as Mr. Longmaid had had to pay double for everything. As to the dressing-floors, 1000*l.* was the outside sum that should have been put in that direction; if they were going to do anything with the property at all they would have to smelt. There were no substantial men there to buy the ore, and to send it to England would require a running capital of 10,000*l.*, and then he did not see how they could possibly make any profit out of it. Some time since there was an establishment at Chicago where lead ores met with a ready sale, but he was not aware whether that was still open. There was an enormous mass of ore in the mine, and it could be made to yield a profit by building a furnace at Sandy, roasting the ore at the mine, dressing it a little, and sending it down to smelt; it could be done, although the ore was difficult to treat, for the reason that it contained a little blende, which made it very refractory in the furnace. Shareholders should not deceive themselves, for nothing short of 10,000*l.* would be of any use; he was prepared to pay his share, so confident was he in the future of the property. The railway was open to within 2½ miles of Bingham, and so soon as they could get coke up to the property the expenses would be considerably reduced. Mr. Longmaid had done the only good mining that had been done; he had driven an adit, unwatered the mine, and opened backs enough to supply their requirements for a year or two. Mr. Murphy sunk a shaft the wrong side of the ledge, so that every foot sunk the further was the shaft from the ledge.

A SHAREHOLDER asked if it would not be possible for Mr. Probert to make an offer for the property of (say) 1*l.* per share.

Mr. PROBERT: No. He could not undertake the management; but he would do anything in his power to assist the company if an effort were made to save the property.

A SHAREHOLDER: There is 7000*l.* to work upon, and do you, Mr. Probert, suggest the management should be taken from the present board?——Mr. PROBERT: If you entrust those gentlemen to spend the last shilling of the company's money you are unwise.

Mr. CARR asked Mr. Probert if he had mentioned to Mr. Longmaid the point he was now raising about the loss of silver, and if he did would Mr. Probert kindly give the meeting Mr. Longmaid's reply?——Mr. PROBERT said he had mentioned it to Mr. Longmaid, but found that he had formed his own opinion from the data given him here, so that he was not prepared to alter his scheme.

The CHAIRMAN said that it was necessary to state in reply to what Mr. Probert had said about not forwarding to Mr. Longmaid the necessary means, that the money had been sent out as it had been collected, and no one else could possibly have done more. As to smelting their own ores, it had been tried and signally failed. The directors had done their best to get honest management, but hitherto had not succeeded. A large amount of money having been lost in smelting, the shareholders were called together to determine whether or not it would be wise to abandon the smelting, and simply dress the ore to sell it. The experiment had been tried and proved successful, and it only now remained to be seen the amount of profit that could be realised. If the meeting thought other directors could do better, the present board were perfectly ready to give place to them. He believed they would be able to make a profit by a pursuance of the present scheme, and in Mr. Longmaid they had a competent man. Mr. Probert did not profess to be a practical smelter, but had a good practical knowledge of metallurgy. Mr. Longmaid had been engaged for many years in large copper smelting-works, and a metallurgist all his life, and his father before him, and he (the Chairman) believed Mr. Longmaid knew as much about smelting ores as any man on that coast.

Mr. PROBERT: And a great deal more.

The CHAIRMAN said if the shareholders wished that a small smelting experiment should be tried, Mr. Longmaid would be only too glad to do it. Mr. Probert had some idea of taking the mine off the present company's hands.

Mr. PROBERT said that some time since he should not have been afraid to offer the company 3000*l.* a year and pay all costs, but would not do so now, after the furnace and plant had been removed.

Mr. BENNETT said that any quantity of their dressed ore could be sold in Liverpool at 16*l.* per ton.

Mr. PROBERT said it would cost $30 per ton for the transit of the ore from Ogden to New York, and down the canyon to Ogden $3 or $4 per ton.

Mr. APPLEGARTH said that freight from New York by steamer was 30s. per ton.

Mr. BENNETT said it was very remarkable that where silver was found in the galena in the form of sulphuret it should be washed down to the extent indicated by Mr. Probert. He should like to know what Mr. Longmaid said to Mr. Probert upon the subject.——Mr. PROBERT said he discovered it in his first experiments, and told Mr. Bateman of it.

Mr. BENNETT said that in dressing ores they found the loss of silver was very trifling. As to the iron pyrites, it would be remembered that some two years since he told the shareholders that Mr. Henry Sewell had discovered that the property contained admirable fluxing materials, and that it contained a portion of gold and silver, and at that time Mr. Murphy was purchasing flux ores.

A SHAREHOLDER said he had every confidence in the mine, and also in the course now being pursued. His own impression was that the costliness of everything that Mr. Longmaid had had to purchase arose from the tardiness with which the shareholders had paid their calls. If the whole call of 10s. per share was now made the directors would know what they were doing—not that he expected that call would be sufficient. If Mr. Longmaid was all that Mr. Probert said he was, why not accord him all the confidence which he deserved?

Mr. PROBERT, in reply to a question, stated that if he had any connection with the company it would be entirely gratuitous. The company had nothing to give him, but he should be willing to confer with Mr. Longmaid, in whom he had great confidence. The works could not be run till March or April, and it must be remembered that some months must elapse before the ore could be realised. Why not sell the ore at Chicago? He was quite satisfied that selling it in this country would prove a delusion—if it were $100 ore it could be done with a profit; in Utah it was looked upon as lead and nothing more.

Mr. APPLEGARTH said the call now proposed to be made would not be paid till the middle of March, so that there would not be too much time to get the works ready for the summer.

The resolution making the call was put and carried unanimously.

A vote of thanks to the Chairman closed the proceedings.

ENGLISH AND AUSTRALIAN COPPER COMPANY.

A general meeting of the shareholders was held at the London Tavern on Thursday,—Mr. R. A. ROUTH in the chair.

Mr. C. B. ROGERS (the secretary) read the notice convening the meeting. The report (an abstract of which has already appeared in the Journal) was taken as read.

The CHAIRMAN, having read copious extracts from the report, stated that, considering the large amount of work done, the result was certainly disappointing, but the fact could not be disguised that if the fluctuations in the price of copper had not been so great there would have been a very large sum to divide among the shareholders. During the first six months of the year they sustained a serious loss, but during the last six they not only recovered that amount, but realised a moderate profit—therefore they thought, on the whole, they should be congratulated that the year's operations had not resulted in a positive loss instead of a small profit. If they calculated a difference of 1*l.* per ton upon 2000 tons, they would see the difference that the drop in the price of copper had made to them.——A SHAREHOLDER said much depended upon how the ore was bought.

The CHAIRMAN said the purchases were always regulated by the Swansea Ticketing, and that the average price they had realised during the past year had been 91*l.* 16s. 6d. net, the gross amount being 95*l.* During the period under consideration the sales of copper on this side had been satisfactory, considering the fluctuation in the market, and, as he had already said, the purchases of ore on the other side were governed by the Swansea Ticketing, but it should be remembered that it was important to them to keep the furnaces at work, in consequence of the very great competition that was going on with the Wallaroo Company to obtain the ores. As to the supply of coal, there was not the slightest fear but that there was an ample supply to smelt any amount of ore that could possibly be obtained without coming to England; an ample supply could be obtained from Newcastle, where their new works were situated. It was also important to recollect that some loss necessarily resulted during the saturation of the furnaces, and in their case it might be put down at 5000*l.* They had large contracts with the Lambton Collieries, which were raising large quantities of coal. As to the supply of ore, the total quantity in 1870 was 3740 tons, in 1871, 5441 tons, in 1872, 6540 tons, and in 1873, 10,979 tons; that was a very respectable amount, and he hoped to see it largely increased, if not doubled. In former days they had smelted 16,000 tons, and they now possessed every necessary appliance to smelt 20,000 tons. He was glad to be able to state that there were very good prospects in the supply of ores, and from a source that could have been hardly expected. There was a new country, called New Caledonia, about 1300 miles from Newcastle. Their manager, who was not one of those men who went to sleep, decided to take his principal engineering man to verify or otherwise the marvellous accounts that had been received with regard to the copper production of this island. He found that several mines had been opened, which, so far as he could ascertain from the measurement of the stopes, were already capable of yielding some thousands of tons of ore. He immediately made contracts for the supply of 1000 tons per month: 70 tons of 24 per cent. ore had already been delivered at the works at Newcastle. If this supply turned out as they expected it would to a very considerable extent relieve the many difficulties they had experienced upon this point—that is, with reference to the extreme competition they had with Wallarroo.

A SHAREHOLDER asked if the average of the New Caledonia was known?

The CHAIRMAN said it averaged over 20 per cent. They had contracted with one mine to supply 600 tons, and another 400 tons. In reply to further questions, he stated that the contracts for the ore were for four years, and the contract for the supply of the small coal was for 21 years, at 2s. 6d. per ton; but, owing to the large demand springing up and the advance in price, although they, of course, held on to their contract, yet he believed that for some of it they had given 6d. per ton extra, but substantially the contract of 2s. 6d. per ton remained in full force. The prospects of the company were in every respect most encouraging, and he looked forward to a career of increasing prosperity. He then moved that the reports and accounts be received and adopted.——Mr. A. CORBETT seconded the proposition.

A SHAREHOLDER asked the present price of copper.——The CHAIRMAN said it was to-day 87*l.* to 88*l.*, but in India it was 105*l.*; so that they had telegraphed out to their manager to take advantage of the Indian market.

Mr. SURGEY believed they possessed a very valuable property and a most excellent business, and he could not conceive why it was not made to pay better. The turnover of the year had been 268,000*l.*, while they had realised a profit of only 1953*l.* After payment of the dividend last year there was carried forward a good balance, but after the payment of the dividend now proposed the amount to be carried forward would be only 502*l.*, so that in point of fact that dividend had not really been earned out of the last year's profits. It was clear that something very wrong must have occurred to cause this state of things. He was willing to admit the directors had done their best, but the directors must admit that such a state of things called for enquiry. In justice to the shareholders, it was absolutely necessary that a committee of shareholders should be appointed to look into the matter, and report thereon. He confessed he did not anticipate a gloomy future for the company, quite the reverse, but it was necessary the company should be managed carefully. He could not understand how it was that there should be so great a competition with the Wallarroo Company. He had communicated with Mr. Lambert to see if these matters could not be harmoniously arranged, and he was glad to find that company had taken a very satisfactory view of the question, and he was in hopes some good may result therefrom. If they all worked together in harmony, and more economically, he thought their prospects were encouraging, and that good dividends would be paid. He then moved as an amendment that a committee of five shareholders, three to form a quorum, shall be appointed to enquire into the affairs of the company, with the view of ascertaining the cause of the present financial position of the company. He wished it to be understood that this was not intended as a hostile committee, but simply to enquire into the affairs of the company, and he trusted the result would be satisfactory.

Mr. FREWER (a director) said it was obvious the sole object of the board was to make the company as successful as possible, and the question, therefore, was had they taken such steps as to command the approval of shareholders? He emphatically said they had; and, moreover, that no board could have paid more attention to the company's affairs than the English and Australian Company (hear, hear); but, at the same time, he was prepared to say the result was most disappointing. The loss sustained had not been the result of bad management, but from events beyond the control of this or any other board. The origin of their loss was simply this—the interruption to the cable between here and Australia, which entirely altered the nature of their business, and laid the foundation of the loss under which they were suffering to day. When a smelting company had furnaces in operation it was essential to keep them supplied with ore and coal, and moreover, with ore of a mixed quality, for it was by that they obtained the quality of copper which had gained for it the highest name in the market. Some time ago the supplies of ore fell to something like 4000 tons for the year—an amount which would not pay them to keep open the furnaces. The directors turned their attention to obtaining a better supply, and sent their manager and his assistant to various parts of South Australia, and gave encouragement to small mines, and promised to take all the ore raised; the result had been an increase from 4000 to 10,000 tons; but, unfortunately, when the maximum supplies of ore came to them the price became inflated. For this no blame was to be attached to the manager, except so far that he might have purchased upon the next price received, instead of the last to hand; but there were always two parties to a contract, and therefore, the manager had a fierce competition to contend against. This really brought out all any committee could possibly do. Rather than appoint a committee, let any shareholder who chose go to the office, where there was not the slightest concealment of any account. Personally he had no objection to a committee, except that it damaged the *prestige* of a company. As to the future, he believed every purchase made since June had been most satisfactory, leaving a profit upon the prices now ruling, and he believed that henceforth they would be in a position to make good profits. They could hardly over-estimate the value of the contract made with the miners in New Caledonia. It was all very well for the Wallaroo Company to say that they were friendly towards this company, but if their manager knew where there was a good parcel of ore to be sold he would either buy it himself or make the English and Australian Company pay a very good price for it, but New Caledonia was altogether a new field.

Mr. CORBETT also delivered a vigorous speech in defence of the board. He said that in this case there was no valid reason why a committee should be appointed, for he asserted most positively that there were about this company all the elements of a flourishing concern. Mr. Surgey did not understand the difficulties under which the board had been labouring, nor did he know the anxious hours they had spent in deliberation. The present accounts were only made to June, 1873, and they now knew that purchases had been made which would give them the results they had naturally the right to expect, the just profits of a smelting company.

Mr. WRIGHT said that the explanations had been so satisfactory that he exhorted the shareholders present, in their own interest, to oppose the amendment for the appointment of a committee.

After some further discussion the amendment was put and lost; when the motion adopting the report was put and carried, and the dividend of 1s. 6d. per share declared. The retiring directors and auditors were re-elected.

A vote of thanks to the Chairman and directors was passed.

The CHAIRMAN having acknowledged the vote, stated that although the amendment had been lost any shareholder who wished could call at the office and institute any enquiry he choose, and every information would be afforded for that purpose. (Hear, hear.) The proceedings then terminated.

THE OHIO MINING COMPANY.

The adjourned half-yearly meeting of shareholders was held at Douglas, on Tuesday.—Mr. J. ADAMS in the chair.

There were present Messrs. J. Moore, W. Berey, J. Bawden, Bridson, G. Maley, A. Caley, Wood, Quine, S. Bregazzi, Cain, A. M. Lewin, E. L. Watts, Wingrave, J. Lee, W. Allen, W. Waid, Anderton, W. Lewin, &c. Mr. James Adams was called upon to preside. The accounts and report appeared in last week's Journal.

After a discussion as to the amount of outstanding calls, Mr. MOORE said: In order that there may be something before the meeting I beg to move that the report and accounts be received and passed.——Mr. MALEY: I second that.

Mr. QUINE moved, as an amendment, that the accounts do not pass. He had never seen such a balance-sheet in his life, and there never was such mining known as that balance-sheet indicated. Judging by the labour cost the price given to the men must be something scandalous, and there really must be something wrong about it.

Mr. MOORE said that the price given was precisely the same as that at which the bargains were set by Capt. Bawden before he left the company's service.

Mr. QUINE then asked how it was that there was so large a sum as 24*l.* down for candles for the six months?——Mr. BAWDEN said the probability was that the account was for twelve, not for six months. With regard to the cost of driving, of which Mr. Quine complained, it was well known that some descriptions of ground were very hard, and might cost twice as much to drive as softer ground would.——Mr. MOORE said that 6*l.* per fathom was paid for driving now, and candles and powder were deducted off the labour.——Mr. QUINE said that if all the expenses were added up it would be found that the cost of the driving was 11*l.* 3s. 8d. per fathom. Under these circumstances it was best that the company should be wound-up, and he, therefore, begged to move, as an amendment on Mr. Moore's motion, that the report and accounts be not received, and that the company be wound-up.——Mr. BEREY: I second that.

Mr. MALEY said the question of winding-up the company was quite a different matter to the adoption of the accounts, and Mr. Quine had no right to mix them up in the same motion.——Mr. BAWDEN said that he thought that Mr. Quine should state his reasons for moving that the accounts be not passed.——Mr. QUINE: I have given my reasons; you have gone mining mad. (Laughter). Driving at 8*l.* 16s. 3d. per fathom in what has always been considered soft ground! Why the thing is absurd.——Mr. MOORE said that the cost had not been so much as the last speaker had stated. There were some old accounts included in the figures upon which that calculation was based.——Mr. QUINE: If you can give any explanation well enough; but the price of driving is unconscionable. It is shameful, and it is certainly time to put a stop to such a thing as that.

After some further discussion the motion for the rejection, &c., of the report and accounts was put to the vote, when only the mover and seconder voted for it. The original motion for the adoption of the report and accounts was then agreed to.

Mr. MOORE said that the directors had heard a good deal of talk about the mine, and it was the wish of some of the directors that the company should put it in the hands of the directors to advertise it and try to sell it, and that they should have power to liquidate the company, and wind it up as soon as possible.——Mr. BEREY: I will move that the company be wound up in liquidation, and that the liquidators be Messrs. Moore, Watts, and Maley.——Mr. MALEY and Mr. ALLEN (who was proposed in Mr. Maley's stead) both declined to stand.——Mr. BAWDEN said that Mr. Berey's motion was irregular, and out of form. No motion for the winding-up of a company could be entertained unless legal notice was given.——Mr. BEREY: I will move, then, that a meeting be called for the purpose of considering the advisability of winding up the company, and then we can appoint our liquidators.

Mr. BRIDSON said that the sooner the company was wound up the better, if it had no manager.

Mr. MALEY moved the following amendment:—"That the directors be authorised to advertise the mine in the English papers to be sold by tender as a going concern, and that the same be tendered for before the next ordinary meeting of the company, and that then a special meeting be called to lay such tender before the shareholders." In proposing this amendment he said it would be much more judicious

to sell the mine as a going concern than as one which had stopped working. If it were sold in the latter condition very little would be got for it. They had plenty of money to work the mine during the next six months, and if nothing were discovered to encourage them to proceed with its development, then the company could be wound up voluntarily.——Dr. ANDERTON seconded the amendment.

Mr. A. LEWIN said that, in his opinion, this was a most scandalously neglected concern. Here there were a lot of people behind hand in their payments to the amount of over 500*l.*, and, in his opinion, these persons should be made to pay up at once. (Applause.) If the company had not been cramped by the want of funds, arising from the large amount of unpaid calls, the mine might have been carried deeper, and, instead of having to wind up the company, a satisfactory discovery might been made, because all through they had particles of ore, showing that the lead was there. He thought it very hard that a few of the shareholders who had paid up their calls should have been obliged to bear the whole cost of the mine up to the present time.

Mr. BAWDEN said he did not think it would be quite fair to the absent shareholders to take Mr. Maley's motion into consideration that day. There was a large number of shareholders absent, and if notice of this motion had been given they would then have had an opportunity of coming forward to oppose it. Under the Companies Act, at a general meeting of this kind, no special business could be entertained without notice was given, and he certainly thought that notice of this motion should be given before it was taken into consideration.

Mr. BERRY disagreed with Mr. Maley in his statement that they were in a position to carry on the mine for six months more, inasmuch as their debts amounted to over 220*l.*

Mr. BAWDEN said that the statement of liabilities and assets showed about 800*l.* to the credit of the company, and of this at least 700*l.* would be good money. They had, therefore, ample funds to go on for the next six months.

Mr. Maley's amendment was put to the vote, and carried by a large majority.

The proceedings terminated with a vote of thanks to the Chairman.

OLD TREBURGETT SILVER AND LEAD MINING COMPANY.

The fifth ordinary general meeting of shareholders was held at the company's offices, St. Helen's-place, Bishopsgate, on Tuesday,

Mr. T. A. MASEY, F.G.S., in the chair.

Mr. F. R. WILSON (the secretary) read the notice convening the meeting, and the balance sheet, together with the agents' report and report of the directors were submitted.

In the accounts all expenditure up to June 30, 1873, was charged to capital, and it appears that 27,860 ordinary shares of 1*l.* each and 9258 preference shares of 10*s.* have been issued. The profit and loss account from July 1, 1873, to Jan. 3, 1874, showed—

Dr.—Ore sales, July 23, 1873, to Jan. 3, 1874, inclusive				£7144 6 3
Cr.—Office and travelling expenses, stamps on leases, &c.	£ 262	9	11	
Mine cost to Dec. 6, and materials	4580	7	2	
Royalty	714	9	6	
Stannaries dues	5	9	1	= 5562 15 8
Balance profit				£1581 10 7

Capts. W. Hancock and W. T. Bryant's report after referring to the various points of operation, states:—"You will perceive by our report, as calculated on at the last meeting, the prospects of the mine have very considerably improved, as our returns have shown the last six months, and looking at the different levels we have in operation with the long run of ore ground gone down in advance of the end, we see no reason to doubt why we should not do much better in the ensuing 12 months than we have in the past, although we may be a little delayed in two or three months time in our regular returns, owing to the men having to go to contstan to arrange the pitwork, and probably have to put in new leading to whim. In conclusion, we have great pleasure in congratulating you on the improved prospects of the mine, and hope shortly to see a great reduction in the price of coals and other materials, &c."

DIRECTORS' REPORT.

It affords the directors great pleasure to place before the shareholders the highly satisfactory result of the last year's working of the mine, the details of which are fully set out in Capts. Hancock and Bryant's report, and the particulars of the expenditure in the balance-sheet. With reference to the development of the mine, Capt. Hancock estimates that he has ore discovered in the workings to the value of upwards of 13,000*l.*, based on a calculation of only 5 fms. of ore above and 5 fms. of ore below the levels driven, instead of 10 fms. respectively. The 80 fm. level south is now reaching the run of ore ground met with in the level above, and therefore every fathom driven will give 10 fms. of additional "backs" to be taken away, thus adding considerably to the reserves of ore and the wealth of the mine. The great importance and value of this level will be seen when it is stated that, judging from the ore ground gone through above, it is expected to give a continuous run of ore of over 100 fms. in length. It is also only reasonable to expect that it will prove of equal, if not of greater, value than the 70, which will be seen in Capt. Hancock's report has been worth from 9*l.* to 14*l.* per fathom. A reference to the balance-sheet will show that from July 1 last the mine began to make a profit on the working; the directors therefore decided, subject to the approval of the shareholders, to cover the amount of expenditure made in the development of the mine to June 30, 1873, from profit and loss account to capital. The revenue from July 1, 1873, shows a profit from that date of 1581*l.* 10*s.* 7*d.*, which will admit of the payment of a six months' dividend at the rate of 17½ per cent. per annum on the preference capital, and 7½ per cent. per annum on the ordinary share capital; this will absorb 1149*l.* 15*s.* 9*d.*, leaving a balance of 131*l.* 14*s.* 10*d.* to be carried forward to profit and loss new account, and 1362*l.* 10*s.* 6*d.* on capital account.

The directors have also the gratification of reporting that 53 tons of ore were sold on the 12th inst., realising 1771*l.* 14*s.*, being at the rate of 37*l.* 10*s.* 6*d.* per ton for 32 tons, 29*l.* 9*s.* per ton for 15 tons, and 21*l.* 10*s.* 6*d.* per ton for 6 tons, being an increase of over 2*l.* per ton on previous sales, notwithstanding the fall of a like amount in the metal market, and yielding a substantial profit with which to begin the new year. The directors have also to state that although few of the shareholders subscribed for the preference shares, yet the whole were placed without the payment of any commission whatever. The directors at the commencement of last year voluntarily decided among themselves not to take any fees until the mine paid a dividend, and they now leave the question of remuneration for past services for the year in the hands of the shareholders. In consequence of the north part of the lode in depth dipping towards an adjoining property, the directors have acquired the mineral rights under the same at 1 15th royalty, subject to the sanction and approval of the shareholders. Mr Lewis Waterman, who succeeded his father as a director, retires in accordance with the Articles of Association, but, being eligible, offers himself for re-election.

The progress the mine has made during the past year is illustrated by a reference to the sale of ore for the month of January, 1873, which realised 654*l.* 13*s.* 9*d.*, as against the sale just made of 1771*l.* 14*s.*, showing nearly a treble increase in the returns. A large increase is also likely to take place during the ensuing year from the opening up of the 80 and other additional levels. The directors take this opportunity of recording their appreciation of the services of Mr. Wilson, the secretary of the company, whose timely and indefatigable assistance has been of essential service to the company on many occasions. In congratulating the shareholders on the present prosperous and highly satisfactory position of the company, the directors may be permitted to remind them that it has only been achieved in the face of repeated difficulties, financial and otherwise, as well as under great disparagement, and that—although the present result has taken a much longer time to accomplish than at first anticipated—the shareholders may now look forward to enjoy great future prosperity.

The CHAIRMAN, before moving the reception and adoption of the report, said he would make a few remarks with regard to the balance sheet. The phraseology "profit and loss proposed to be written off," appeared to have caused some misapprehension, he might, therefore, observe that they did not propose to write off anything, but simply to leave the amount where it is in the capital account, and close that account to the end of June, 1873. Passing on to the balance sheet to Jan. 3, 1874, he explained that as available assets they had bills receivable, 2599*l.* 11*s.* 6*d.*; sundry debtors for ore sales, 1727*l.* 17*s.* 1*d.*; and cash at City Bank, 8*s.* 5*d.*, the latter amount remaining there because they had for more than a year past had no business in London to require them to keep money there, and the amount was too small to draw a cheque for. As to the bills receivable, he might explain that they sold their ore and got a three months bill for the amount. This accounted for nearly all their available assets being in bills receivable. As to the item on the debtor side of the balance sheet—overdrawn at Liskeard District Bank—it stood there because they had an arrangement with their bankers to overdraw when necessary, as it was cheaper to overdraw a hundred pounds or so than to discount a bill for perhaps 1500*l.* at a high rate of discount in order to provide cash. With regard to the profit and loss account from July 1 to Jan. 3, he would especially call their attention to the steady increase in the sales of ore (they were in July, 1202*l.*; September, 1241*l.*; October, 1400*l.*; November, 1597*l.*; and in January, 1702*l.*), amounting to 7144*l.* 6*s.* 3*d.* in all, and the directors had every confidence that the returns would still go on increasing. As to the item of 65*l.* 1*s.* 10*d.* for travelling expenses it might to some shareholders appear large, but he would remark that it was necessary that in the management of a large mine the directors should exercise their discretion as to how often they should visit the property; some portion of the amount, moreover, belonged to the previous year. Then there was interest and discounts, 69*l.* 18*s.* 10*d.*, with reference to which he would remind them that they had passed through a heavy period for discount, though he hoped that increased business might cause the item to be larger next time. He might call attention to the working of the mine, as shown by the plan, before putting the resolution for the adoption of the report to the meeting. The delay in arriving at their present prosperous state had been caused through their having had to drive long levels to the ore ground. They had now the 80 fm. level driving, which would give them 150 fms. of ore ground, which at only 10*l.* per fathom would be worth 15,000*l.*, in addition to the 13,000*l.* of reserves which had been estimated by Capt. Hancock. They were carrying forward operations in the 60, 70, and 80 fathom levels, and were now rapidly going down for a 90 fm. level. After looking at the plan of the mine, and seeing the long run of new ore ground they had to work upon, he thought all would agree with him that Capt. Hancock was opening out a magnificent property, and there was no estimating the extent of future profits, but if the present rate of development continued, of which there was no doubt, they would this year receive at least 20 per cent. on the ordinary shares, and 30 per cent. on the preference. He concluded by formally moving that the reports and accounts be received and adopted.

Capt. BROWN seconded the resolution.

The reports and accounts were then unanimously adopted.

The CHAIRMAN proposed that a six months' dividend at the rate of 17½ per cent. per annum on the preference shares and 7½ per cent. per annum on the ordinary shares be declared.——Mr. LEWIS WATERMAN seconded the resolution with much pleasure, because he thoroughly believed that the dividend had been earned.

A SHAREHOLDER did not understand that the dividends were to be apportioned in the way which the resolution stated, but had supposed that the preference shares took 10 per cent., then the ordinary shares 10 per cent., the surplus beyond that being equally divided. He was himself a holder of preference shares, and, therefore, did not object to the resolution as it stood.

The CHAIRMAN said that by the terms of the issue the preference shares took 10 per cent., and in the division of any surplus profit all shares ranked equal.

Mr. WILSON said that although the shareholders had the opportunity of taking the preference capital only 2600 of the shares were taken by them, and the payment of the 10 per cent. was really unimportant, as it only involved 460*l.* per annum, or less than one month's profit.

The declaration of the dividend was then unanimously agreed to.

Mr. Waterman was, upon the proposition of the CHAIRMAN, seconded by Capt. BROWN, re-elected a director; and Mr. Wahab was upon the proposition of the CHAIRMAN, seconded by Mr. WATERMAN, appointed auditor for the ensuing year, at 10*l.* 10*s.* remuneration.

Capt. HANCOCK, in reply to Mr. M. Green, stated that they had three ends going, with six men in each, and had 150 fms. of ore ground open. The whole of their returns of ore were obtained from new ground in depth, and not from the old workings, and he had no hesitation in saying that no mine in Cornwall had been better worked, and had full confidence in their prospects of the ground continuing as valuable as it had been. Their reports in the *Mining Journal* were not very highly coloured, but he was glad to say they were always realised.

Mr. H. H. THOMPSON bore testimony to the energy of the directors. He had been to the mine and found everything of the best description. He found that the directors had received no remuneration for the past year, and suggested that they should recieve the balance remaining after payment of the dividend.

Upon the proposition of Mr. WILLS, seconded by Mr. ATTRELL, the sum of 100*l.* was voted to the directors as some remuneration for services for the past year.

At an extraordinary meeting, held immediately after, the shareholders sanctioned the taking of the lease of adjacent fields, the Chairman stating that no premium whatever was to be paid, and that the dead rent was 50*l.*, merging into a royalty of 1 15th.

The usual complimentary vote of thanks to the Chairman, proposed by Mr. ATTRELL, terminated the proceedings.

EAST NANT-Y-MWYN LEAD MINING COMPANY.

The third half-yearly meeting of shareholders was held at the offices of the company, Nicholas-street, Bristol, on Saturday,—Major CASTLE, J.P., presided, and there was a large attendance of shareholders.

Mr. G. H. BOWYER (the secretary) having read the notice convening the meeting, and also the minutes of the last half-yearly meeting, and the same having been confirmed,

The CHAIRMAN said that the matters that would come under the consideration of the meeting had arisen in consequence of what had been done during the week. Mr. Lyne, Mr. Fox, and himself had visited the mine on Thursday. Matters, as they were all aware, were not very satisfactory; the shareholders had had continued demands made on them in the shape of calls, without any returns in the shape of lead. The directors could not help it—it was their misfortune, with others, to be in that situation. There was a report from themselves, accompanied by one from Capt. Francis, one of the most eminent mining men in England. It was proposed to read those reports, but not to take a vote as to whether they were right or wrong until an adjourned meeting. In the meantime, the reports would be circulated among all the shareholders, who he hoped would well consider them, and also consider whether it was worth while to go on with the mine or not. The directors were of opinion that it would be well to go on; but he would ask the shareholders carefully to read Capt. Francis's report before coming to a decision.

The SECRETARY then read the directors' report and the report of the manager, Mr. Trevithick, as follows:—

DIRECTORS' REPORT.—The directors beg to submit their report, with statement of accounts for the half year ending December, 1873, from which it will be seen that the expenditure (including 576*l.* 0*s.* 11*d.*, paid on account of plant and machinery) is 1198*l.* 1*s.* 1*d.* The directors regret that the operations of the past half-year have not produced more satisfactory results as regards returns for the capital expended on the undertaking, although the works have been persistently and steadily carried on, notwithstanding the high cost of labour, and the actual difficulty of procuring men of experience in mining. The report of Mr. Trevithick, the manager of the mine, states the progress which has been made during the past six months, and to that the directors beg to refer the shareholders. It appears from the balance-sheet, issued with the sanction of the auditor of the company, that, taking into account all arrears of calls, there is not now standing to the credit of the capital account of mine more than the sum of 671*l.* 13*s.* 1*d.*, against which the cost of the months of January and February has to be debited, and, taking into consideration the fact that only 2*s.* 6*d.* per share of the capital remains to be called up, the directors feel that the shareholders should clearly realise the exact position of their undertaking, with the view of deciding upon what course should be pursued. The shareholders are aware that the original desire of the directors was to resume the working in the old shaft, which was in existence at the time the company was constituted: and, by reference to Mr. Trevithick's report at the meeting in February, 1873, it will be seen that such design was abandoned for reasons which appeared to the directors to be founded on substantial grounds, and which grounds were subsequently adopted by the shareholders at the half yearly general meeting. The new shaft was sunk to the depth of 11 fathoms, and two levels were also driven near the new shaft, with the hope of cutting the Comet lode, of which there are strong indications in the adjoining mineral property. This lode has, however, not been found hitherto, and the directors, feeling the grave responsibility attaching to the expenditure of the greater part of the capital of the shareholders, without the satisfaction of substantial results, decided in view of the present general meeting to take the opinion of Capt. Absalom Francis, a well known mineral agent in the Principality. Accordingly, a meeting was arranged between the directors and Captain Frances on the mine, which took place on the 12th inst., and the directors think it due to themselves to state that simply requesting Capt. Francis to view, as it were, judicially the past working of the undertaking they placed Capt. Cock, the present captain of the mine, at his disposal, and they together thoroughly inspected the mine without any interference on the part of the directors or manager. The report of Capt. Francis, endorsed by Capt. Cock, will be read to the meeting, and it only remains for the directors to add that they entertain high confidence in Capt. Francis's opinion, and they would urgently impress upon the shareholders of this company to co-operate with them in taking measures for the provision of further capital, to enable them to develope the resources of the property as recommended by Capt. Francis. The directors going out by rotation are Major Castle and Mr. Piggott, and these gentlemen, being eligible, offer themselves for re-election. The shareholders will also to have to nominate an auditor; Mr. G. T. Tricks is willing to hold the appointment, and the directors with pleasure recommend his re-election.

MANAGER'S REPORT.—Since our last half-yearly meeting we have completed our water-wheel and rods, and put in an 8-in. plunger-lift from the surface to the 25, and also put in a new dam, and sunk several fathoms in our new shaft, in which we cut a lode very hard, and which is now at a stand. We have also driven our shallow adit level south, and cut a large and promising lode, not rich, but producing spots of copper and lead ores and mundic, but not of value. We are now driving west, and the lode appears to be increasing in size and promise. In our deep adit we have also driven several fathoms south, where we cut a lode from 15 in. to 18 in. wide, poor. Capt. James Cock having been lately appointed on the mine, I must say I have every confidence in his ability and fidelity for such a situation, he being always found at his post night and day, as well as being a good miner.

The CHAIRMAN next requested the Secretary to read the report of Captain Francis, which he said was a very valuable one. It was to the following effect:—Having received instructions from Mr. Bowyer, your secretary, to visit this property, I now beg to hand you my report thereon. I presume it is almost unnecessary for me to say that it lies, as its name implies, to the east of the celebrated and rich old mine of Nant-y-Mwyn, being one of the oldest and richest mines in the Principality, and is almost the most southernly mine in the clay-slate formation, stretching from Snowden to the north into about the centre of Brecconshire, and in which all the great mines of Carnarvonshire, Cardiganshire, Montgomeryshire, and Brecconshire are found, through almost all of which the veins run in an east and west direction, varying from this point only about 20° south or north from it. The veins or lodes that traverse this property are the Nant-y-Mwyn veins, and their character is unchanged and equally promising to produce very large quantities of ore on this grant, and of giving large and continuous profits, as the Nant-y-Mwyn has done when farther developed. I shall now point out the work that has been accomplished up to this time, and then advise as to what should be carried out in future, and which if attended to cannot fail, in my opinion, to establish this as a permanent dividend paying mine. I first went on to what is termed the shallow adit level. At this place a cross-cut has been driven between 50 and 60 fms., and about 3 fms. from the forebreast passed through a good looking and promising vein, about 6 feet wide, containing a very nice cry-tallised sugar spar, with rich spots of copper ore, and altogether is a very fine lode. This lode is being driven on west, and will gain backs or heights of 70 fathoms by being pressed on in that direction, and this I would strongly recommend you to do, fully believing that you will find and lay open some rich courses of lead ore by continuing this level as advised. An engine shaft has been sunk to a depth of 18 fms. from surface to the east of this adit level, and a cross cut driven into it from surface, which came in at 10 fms. deep, giving good air in the shaft, and cutting off the surface water to this depth. From this shaft a cross-cut has been driven south about 14 fms., with the intention of cutting the red vein, but whether that object has been accomplished or not is very doubtful; if it has the vein is in unsettled or broken up ground—and in order to prove this I should recommend your opening out on the course of the red vein where it is seen at surface for 2 or 3 fms., which will cost but little (say, 10*l.*), and will effectually prove it. This shaft is in an excellent position for proving the veins at a greater depth, and is well situated as regards your machinery for its future sinking. Your old engine-shaft has been sunk to a depth of 25 fathoms from surface, and at this depth a considerable quantity of rich lead ore has been stoped away and sold, as I have been informed, by the former owners; but, from the appearances of the vein in a sink a few fathoms from this engine-shaft, and from 2 to 3 fms. under the 25, it is quite evident that you have just entered on the back or top of a great mass of lead ore. The workings at the 25 are very considerable, and must have cost a large sum of money to have explored them. You have now fixed in this engine-shaft an 8 in. plunger-lift from the surface to the bottom, being attached by a line of rods from your admirably erected water-wheel, which is 30 ft. diameter, and 2 ft. 6 in. over the breast, the whole of which works admirably, and is a complete success. In order to develope your mine with rapidity it will be necessary to sink this engine-shaft either 12 or 15 fms. deeper as quickly as possible, and then to open ground under the course of ore now passed over in the 25, and which has so considerably improved in sinking 2 or 3 fms. under the 25. Specimens of the lead ore broken from the winze in my presence I now beg to lay before you. As your ore is found massive and rich, I have advised your agent to be careful in its selection, as a great portion of it can be sold as round ore or in large lumps, and this will not only save the cost of dressing, but will add to its price from 2*l.* to 3*l.* per ton. The cost of sinking the shaft may be estimated at 300*l.* (15 fathoms); to drive east and west on the course of the lode before commencing stoping, 200*l.*; cost of driving shallow adit as recommended, 180*l.*; other work, 120*l.*; agencies, &c., 250*l.*; and for unforeseen expenses, 70*l.*—or in all 1000*l.* I believe this sum will show you that you have a property second to but very few in the Principality, and you will then know what dressing apparatus is most suitable for making your ore merchantable. I have expressed my opinion straightforwardly, and I hope it may be deemed satisfactory to all concerned.

CAPT. COCK'S REPORT.—Having read Capt. Francis's report on this mine, and having shown him over the works, I quite confirm his views as to the prospects of the undertaking.

The CHAIRMAN again expressed a hope that before the shareholders formed a judgment on these reports they would read them at home for themselves. He would recommend that the meeting be adjourned for a reasonable time, and a copy of the reports should be sent to each shareholder.

The SECRETARY then read the statement of accounts, which were duly audited.

Mr. LYDDON asked whether, in accordance with the Articles of Association, the audited accounts had been deposited at the offices of the company seven days before that meeting?——The CHAIRMAN said that he was not prepared to answer the question.——Mr. LYDDON then put the same question to the Secretary.——The SECRETARY explained that the accounts had been prepared for seven or ten days, but owing to the absence of the auditor from Bristol had not been signed until Thursday.——Mr. LYDDON declared that this was informal, and that the accounts were altogether wrong from beginning to end.——In reply to Mr. Haynes it was stated that the accounts in round numbers showed a total of receipts of 13,718*l.*, and of disbursements 13,019*l.*, thus leaving a credit balance of 698*l.*

Mr. HAYNES wished to know how it was, under these circumstances, the company owed its bankers 609*l.* 19*s.* 7*d.*? Where was the 698*l.*?——The CHAIRMAN: I can only tell you the directors have not got it. (Hear, hear, and laughter.)——The SECRETARY said the receipt of 13,718*l.* was assuming that every shareholder had paid up the calls.——Mr. HAYNES: Then you have taken credit for money not received? The last and the previous account were both equally wrong with the present. He did not impute anything radically wrong or dishonest, but the accounts were not rendered in a shape or form satisfactory to the shareholders.——The CHAIRMAN said he was not a professional accountant, and if the shareholders wished any further explanation they must have the auditor there.

Mr. HAYNES asked whether the balance was due to or from the mine?——The CHAIRMAN said Mr. Haynes could take it which way he pleased.

Mr. FOX referred to the following paragraph in the report, with which Mr. Haynes expressed himself as satisfied:—"There is not now standing to the credit of the capital account of the mine more than the sum of 671*l.* 13*s.* 1*d.*, against which the cost of January and February has to be debited."

Mr. LYDDON suggested that a committee of investigation should be formed.——The CHAIRMAN said the directors had no objection whatever to that.

Mr. LYDDON also suggested that the number of directors should be increased from four to seven.——The CHAIRMAN said that so far as he was concerned he had no wish to be re-elected, and he believed Mr. Piggott would be glad to retire, owing to his numerous engagements in London.

Mr. LYDDON was about to comment on the transfer by the vendors of the mine of paid up shares to certain individuals, when Mr. Fox interposed, and said if the meeting was going to be adjourned these matters should not now be discussed.

The CHAIRMAN said 200 shares had been transferred to him, and he did not care who knew the fact.——Mr. LYDDON appealed to the meeting whether they would hear him or not.——The CHAIRMAN ruled that it would be more convenient to adjourn the meeting.——Mr. LYDDON: Do you object to a committee of investigation?——The CHAIRMAN: No; we have done nothing wrong.——Mr. LYDDON: I do not impute it.——The CHAIRMAN: You do, Sir. If you propose a committee of investigation I will second the motion.

After some further discussion it was decided to adjourn the meeting until Friday March 13. It was also resolved that Messrs. Lyddon, Haynes, and Hill form a committee of investigation, with power to call in a competent and independent person to inspect and report upon the mine.

In reply to a SHAREHOLDER, it was stated that the large arrears of calls were owing to one gentleman having only paid 5*s.* per share on the 1000 shares he held. Proceedings had been taken against him, but without effect, and it was probable his shares would have to be forfeited. It was also elicited, in reply to a question, that a call of 2*s.* 6*d.* per share would produce about 1000*l.*, and that the directors, who had given 75 attendances during the past two years had received no fees.

Mr. LYDDON asked if there was any objection to increase the board to seven?——The CHAIRMAN: Yes; it was an unnecessarily large number, and he should resign. He should have no objection to add one to the board, and he asked Mr. Haynes to serve.——Mr. HAYNES said if the shareholders wished it he would.——The CHAIRMAN said the board would be very happy to receive Mr. Haynes, and proposed his election.——Mr. LYDDON seconded the motion, and it was adopted unanimously.

Mr. HAYNES briefly acknowledged the compliment, and said he would do his best both for himself and the shareholders. He proposed that Major Castle be re-elected a director.——This motion was seconded by Mr. LYDDON, and unanimously adopted.——It was understood that another director in the place of Mr. Piggott would be elected at the adjourned meeting.

The shareholders were invited to inspect specimens of lead ore from the mine, and in the course of some casual observations it transpired that the company had barely sufficient funds to carry out the recommendations of Capt. Francis.

A vote of thanks was accorded to the Chairman and directors, and they were urged to get in the arrears on the calls.

The CHAIRMAN returned thanks, and said they might have erred, but there was nothing wrong on the part of the board, the secretary, manager, or captains. The shareholders should have their best services to make the mine a paying one.

The proceedings then terminated.

BOG LEAD MINING COMPANY.

An extraordinary general meeting of shareholders was held at the offices, Austinfriars, on Tuesday,—Col. CORBETT, M.P., in the chair.

Mr. W. J. LAVINGTON (the secretary) read the notice convening the meeting.

The CHAIRMAN said the business of the meeting was to pass a resolution authorising the directors to borrow upon mortgage a sum not exceeding 15,000*l.* The value of the machinery, to say nothing of the property, was certainly not less probably than 7000*l.*—therefore, there was ample security for the 5000*l.* which had been arranged for to-day to be paid, and would put the company in a very comfortable financial position, enabling them to pay off all their liabilities. The board had undertaken to absorb the unissued shares as the money was required. The mine was opening out in a most satisfactory manner—as they had been told would be the case, the lead had been seen at the bottom of the mine, and it only remained for them to continue what they were now doing to ensure a large increase in the returns, and there could be no doubt that in six months the results would be such as to leave a satisfactory margin of profit. The depression in the price of the shares was more apparent than real, as since the beginning of the present year only 165 shares had changed hands. The many difficulties which had beset them were now successfully surmounted, and he had no doubt in his own mind that in the course of six months the shares would command that price in the market to which the proved merits of the mine justly entitled them. He then proposed the resolution.

Mr. GEORGE BATTERS said the shareholders should know that although the shares were quoted in the market at 15*s.* to 20*s.*, their Chairman had undertaken to subscribe for 900 of the unissued shares, and pay for them the par price—2*l.* per share. He (Mr. Batters) never knew such a self-sacrificing or so noble an action on the part of the Chairman of any public company.

The CHAIRMAN said he was already a large shareholder in the company, and he did not ask for any great credit for what he had now done, as he had acted in self-defence. It would have been a most short-sighted policy to have purchased a large number of shares in the market at (say) 15*s.* per share, when the success of the company depended upon the capital to be raised by the unissued shares. He should not put one of his shares, nor would any of the other unissued shares be put upon the market. If the shareholders would but continue to remain firm for another six months they would then have the mine in such a state that, instead of him (the Chairman) having made a sacrifice he would have put a considerable sum of money in his pocket. He mentioned that they had been obliged to sanction the sum of 15,000*l.* as the amount not to be exceeded to be borrowed upon mortgage, because that was the amount stated in the notice convening the meeting; but 5000*l.* was the sum they really proposed to raise.——Mr. G. BATTERS having seconded the proposition, it was put and carried unanimously.

A unanimous vote of thanks was passed to the Chairman, not only for his general conduct of the company's affairs, but also for the liberal way he had come forward to relieve the company from its present difficulties.

The meeting then separated.

BOTALLACK MINING COMPANY.

The quarterly meeting of shareholders was held at Penzance, on Wednesday. Mr. JAMES, the purser, was in the chair, and there was a large attendance of shareholders. The accounts showed a loss on the three months' working of 2773*l.* This amount, added to the debit at last account, made a total debit balance of 4665*l.* It was proposed by Mr. T. S. BOLITHO that a call of 10*l.* per share should be made. It was also resolved to adopt the report of the committee:—"That the working of the Crowns and Wheal Hazard be suspended, and that a special meeting be held on March 19, to consider as to the working of the Higher Mine."——It was moved by Mr. YORK, and seconded by the Rev. R. MALONE, that Lord Falmouth and the other lords should have a renewed application made to them to relinquish the dues.——This resolution was most heartily supported.——The CHAIRMAN stated that Lord Falmouth had received over 30,000*l.* in dues from Botallack.——At the Higher Mine there are 32 pitches on tutwork and two on tribute. At Carnyorth there are 27 tut pitches and one tribute. Shafts and winzes opened in quarter 204 fathoms. The agents reported that at the Higher Mine the 205 north has been productive. The 180 east on Wheal Loor is poor. At Wheal Cock, the 100 south and 90 are opening paying ground. The 85 is opening tin and copper ground, and here further improvement is expected. At Carnyorth the 135, 124, 112, and 100 east are opening tin ground. The 30, east and west on Rodd's lode, is in paying ground. There are several important points of discovery now in progress at both Wheal Cock and Carnyorth parts of the mine, which offer most encouraging prospects to the adventurers. At the Crown part of the mine (which forms the whole of the workings running out under under the sea to a depth of 220 fms.) there are still some tributers working, but the various ends are poor for mineral.

There was a considerable discussion on the very important report which was recommended by the committee—that the whole of the Crown's and the Wheal Hazard should be at once suspended. This was unanimously received and adopted by the shareholders, it being found that these extensive portions of the workings of Botallack could not be carried on except at a great loss monthly. It was also resolved that the agents be requested to make a minute report and estimates on the position and prospects of the Higher Mine against the special meeting to be held a month hence, when its further working or otherwise can be fully discussed and decided upon. The purser, Mr. James, stated that they had received 7*l.* 10*s.* per ton less for their tin this quarter than the preceding quarter. Now the price obtainable for the produce was 60*l.* per ton. He had sold the same quality tin in April, 1872, at 95*l.* per ton.

Mr. EDMUND DAVY made some interesting and valuable observations on the price of tin, and the position of the trade, &c., showing that in 1872 the stocks were estimated at 55:6 tons, the smelting standard for tin being 148*s.*; in 1873 the stocks were computed as 6873 tons, and standard for ore 138*s.*; whilst in 1874 the stocks were supposed to be 10,827 tons, and smelters' standards for ores 98*s.* to 100*s.*

Mr. N. B. DOWNING said he did not think the stocks of tin were so large as represented, and he had great confidence in a considerably increased demand. He understood Mr. T. S. Bolitho to give his opinion that he believed we had come to the lowest point of the depression, and although he did not think there would be any great rise for the present, yet it was probable we might soon see a much firmer tone in the market generally.

Mr. F. BOASE (Mayor of Penzance), as one of the committee of management of Botallack, referred to the very perplexing position they had been often placed in, and the great difficulties they had to encounter; but they (the committee) had done the utmost they could for the interests of the adventurers. (Hear). He knew it was a great hardship on many adventurers to meet heavy calls. (Hear.) He would specially sympathise with those who had purchased shares at high prices. (Hear.) As far as the working miners were concerned, he did not think they were paid too high wages; but one thing he would state, that he considered the adventurers should get much more work done for the money they paid their workpeople. (Hear, hear.) All the "odds" were now and for some

time past dead against the "out adventurer." (Hear.) All employed had their full wages regularly, merchants were the recipients of large sums for their supplies, tin smelters received all their produce, and lords their dues, consequently all those he now referred to had the entire and full benefits of working the mines. (Hear, hear.) He would not for a moment let the working miners suppose that we were hard upon them in any respect, but he was fully satisfied that "in order to meet the times" a reduction should be made on all wages and salaries, beginning from the purser and agents, down to the lowest of their working staff. (Hear.)

Mr. JOHN JAMES (a considerable holder in Bottallack) said he believed it was now most judicious policy to curtail all the operations possible. He felt almost sure that just now we really do not get as much work done for 20s. as we did 10 years ago for 10s.—(hear)—and it was quite evident that the higher the wages paid to the miner the less work we had done. (Hear.) It would really seem advisable at present, under existing circumstances, that in such mines as could not be made to pay cost they should merely keep the water out, and wait for better times. In reference to agents, and their working of mines generally, he feared that often they made the most gross miscalculation, and that estimates too often were most fallacious in their character. (Hear, hear.)

BEDFORD CONSOLS MINING COMPANY.

At a general meeting of shareholders, held at the offices, Old Broad-street, on Wednesday (Mr. KIRKPATRICK in the chair), the SECRETARY read the notice convening the meeting. The accounts, showing a balance of 73*l.* 8s. 1d. in favour of the mine, were submitted, audited, and passed. The following report of the agents was read:—

Feb. 16.—We beg to hand you our report of this mine for the general meeting, to be held on the 18th inst., showing the progress obtained in developing your property during the past four months, including our present position and future prospects, which we consider are of a very encouraging description, as can be seen by the drivage of the 57 fm. level west of the engine-shaft, which is already extended 43 fms. on the course of the lode; in the latter 15 fms. of this drivage the lode is from 4 to 6 ft. wide, of a most flattering appearance, yielding very strong arsenical and sulphur mundics, accompanied with a congenial capel and spar, and good quality yellow-coated copper ore, showing every indication of improving in depth. Consequently, a sump winze is sunk below the 57 fm. level 10 fms., on the south lode, which is within a few feet of the required depth to cross-cut north towards the main lode, where we purpose to extend a drivage both east and west beneath the ore ground already discovered and going down from the level above; as also west towards the shoot of ore existing east of the great cross-course, first discovered in the adit going into the hill. To facilitate our operations in removing the stuff from the western part of the mine to the whim-shaft we have laid a new tramroad in the 57 fm. level, and also made the greater part of the necessary preparations in the 47 fm. level to receive the required machinery and pitwork to drain the water from sump-winze, where we purpose to fix a small drawing-lift, which will be attached to the main rods working in the engine-shaft, and consequently effect a saving in manual labour to keep this part of the mine drained. To carry out the proposed work we calculate to employ 15 hands underground. The surface stuff will partly depend on the quantity of ore discovered and brought to the dressing floors to be prepared for the market, which will incur a probable cost of 80*l.* per month.—G. ROWE, J. MITCHELL.

The CHAIRMAN said the past two years had been devoted to what might be termed dead work at the mine, although it was quite necessary for such to be accomplished in order to secure the future well-being of the property. He considered the shareholders might look forward to the mine very soon paying its own expenses as a prelude to paying dividends. The work already done has been executed with the greatest economy, having regard to proficiency, in which we must not forget the material aid rendered by the excellent water power at our command, effecting so large a saving in coal.——A call of 1s. per share was made.

The proceedings terminated with the usual vote of thanks.

NORTH ROSKEAR MINING COMPANY.

A general meeting of shareholders was held on Feb. 13, the purser, Mr. T. PRYOR, in the chair. The accounts showed a debit balance of 1323*l.* The arrears of calls were 430*l.*

The agent, Capt. J. Thomas, reported that since the last account they had cut plat in the 277, and sunk Doctor's shaft 2½ fathoms below it; the lode contained a little tin, but scarcely enough to value. The 277 was driven 17 fathoms west of engine shaft, lode now worth 10*l.* per fathom. The 263 was driven west 50 fathoms, and improved, now worth 20*l.* per fathom. The winze sinking below the 250 was down 15 fathoms, and nearly holed to the 265 level, lode worth 2*l.* per fathom, and when this was holed a piece of moderately productive ground would be available for stoping. The lode in the shaft was altering in character, and containing a considerable quantity of iron, and with ordinary prices for tin and mine materials, held out fair inducements of success.——The accounts and the agent's report were adopted.

The PURSER said he had now the disagreeable duty of laying before the shareholders a letter he had received from a shareholder holding nearly one third of the mine, who had expressed himself unwilling to go on any further. Some of the largest county shareholders had also sold out their shares, and he believed this had induced shareholders out of the county to look on the mine with a considerable amount of doubt.

After some discussion, Mr. TYACKE proposed, and Mr. WHEAR seconded, a proposition to the effect that "A special meeting of the shareholders be held on the mine on the 24th inst., to take into consideration the future working of the mine, or otherwise."——It is thought that the mine must cease to work, as the returns do not more than about half meet the costs of working. The amount of calls made since 1861 was 6*l.* 4s. per share, or 45,314*l.* on the whole.

Capt. W. C. Vivian, of South Condurrow, said: Several panics have occurred within my memory, sometimes in the copper and sometimes in the tin trade, and the price of tin ore has gone down considerably lower than it is now. Even within the last seven years tin has been sold at as low a price as 48*l.* per ton, but we are a long way ahead of that, although, on the other hand, it is quite true that at that time coals were not more than half their present price. I believe this is a panic which has been accelerated and promoted to a certain extent by the action of the smelters. I do not mean to say that their action is altogether an injudicious one, because foreign tin has got into the hands of several parties in London, who act as metal merchants, metal brokers, and metal speculators, and while tin has been so distributed the smelters have never had any confidence in being able to create a strong market, because they have had weak people hanging on in the market, but I am informed to-day that by combination they have bought all the tin held by these weak holders, and I hope that good will result from it, that we have seen the lowest depths of the panic, and that we shall now gradually emerge from it. Under the circumstances I do trust that those who are strong and able to support Cornish mines at the present time will not fail to do so, particularly those people who are inhabitants of the county, and who have been carrying on large trades in connection with mining operations, and who, no doubt, have derived considerable benefit from it. Looking at the gentlemen who have been largely connected with the mercantile interests of Cornwall, there can be no doubt that their fortunes have been made, to a very great extent, by their connection with the mines of the county. Their trade has been supported, and many of them have become men of great capital and large landed properties. These are things which should not be forgotten, and these people should not forsake the mines in a moment of panic, but they should join the little men, who do all they can to keep the thing going, and if this is done we shall successfully surmount our present difficulties. Cornwall will not sink, but we shall emerge from our present obscurity into a more glorious future.

BOSCASWELL DOWNS TIN AND COPPER MINING COMPANY.

An extraordinary general meeting of shareholders was held at the Guildhall Tavern, on Monday, "to consider the best plan for developing the rich courses of ore found in unwatering the western portion of the mine, and the advisableness, or otherwise, of adopting the working recommended by the captain, by which it would be desirable to sell the eastern engine and stamps, and the tin, which will be found deposited in the eastern floors; also to consider the best mode of raising further capital."

Mr. T. E. SMITH, who presided, said the meeting was called to consider the present state of the company, the plan that had been laid down by the directors for dealing with the mine in its present state, and their financial condition as proprietors. They would remember that at a meeting held about twelve months ago he stated that they might find in the western part the ore which formed the riches of the mine, and which was then covered with water. That had been accomplished, the 190 fathom level had been reached, and a good lode discovered east and west of it. They were now within 12 or 15 feet of the 200 fathom level, which was always spoken of by Capt. Teague and other competent authorities as the richest part of the mine, and the workings now showed that the anticipations in regard to it were not illfounded. They had every reason to believe that their most sanguine expectations would be realised in that quarter; and as to the eastern part, that was worthy of all the attention that could be bestowed upon it. The latter portion was, however, a great burden and a serious drawback to them, particularly in the matter of expenses. They had done their best with regard to the surface working, but that had been seriously interfered with by circumstances over which the directors had no control. If gentlemen who had any experience in mining in Cornwall had looked over the reports that had been issued during the past six months, they would find that the richest mines had been reduced from a dividend-paying state to that of very great difficulty and positive insolvency. Even such valuable properties as Botallack and Wheal Owles has been reduced to a very bad state by untoward circumstances, which affected all mines in Devon and Cornwall. The drop in tin had been greatly against them, particularly when taken in connection with the rise in materials and the increase in labour charges. The mine had now been developed in its richest part, and if the working were pursued there was reason to hope for good dividends, but in order to arrive at that happy state of things it was necessary to secure sufficient to pay off the present liabilities. They should see that their property was not taken away from them by others in the neighbourhood, for it had for many years been looked upon as one of the richest in the neighbourhood of St. Just. The mine was a large one, and might, in fact, be regarded as two, the western portion being the most valuable; and the directors, who were large debenture holders, had come to the conclusion that the most advisable course would be to sell the eastern stamps and engine, as well as the tin that might be found at the foundation, and apply what they realised in liquidation of the debts. They could then vigorously work the western portion. Capt. Teague and other experienced miners in Cornwall were of opinion that the importation of Australian tin was carried on at a great sacrifice to the producers, and would soon come to a standstill; therefore, the price of Cornish tin would soon go up.

Mr. JAMES T. KEVERN (Penzance) said he lived in close proximity to the mines, in which he was a large shareholder, and he could corroborate all that had been said as to its richness. He was a holder of 1300 shares, and he was not afraid of realising profit from his investment. He believed there was a mine there for generations.——On the motion of the CHAIRMAN, seconded by Mr. THOMPSON (director), a resolution was unanimously adopted to the effect that the directors be authorised, subject to the assent of the debenture holders, to sell the engine and shafts, with the tin found in the eastern portion of the mine, to carry on the working of the western part; and that a special general meeting be called to confirm that resolution.——The CHAIRMAN stated that 1000*l.* in addition to the realisation of the property indicated would clear off the liabilities.

A vote of thanks to the Chairman terminated the proceedings.

SOUTH WHEAL CROFTY MINING COMPANY.

The quarterly meeting of shareholders was held at the mine, on Monday, Mr. E. H. RODD (the purser) in the chair. The accounts showed a loss on the quarter of 116*l.*

The manager and agents (Messrs. J. Thomas, J. Johns, and J. Jory) reported that Bickford's engine-shaft was sunk 12 fms. below the 180 on Pryce's lode, which was large and promising, and yielding tin. A cross-cut should be driven at the 192 level to intersect the south lode at that level, as well as to show the distance to sink to reach the junction of Pryce's and the south lode. The 180, east of cross-cut, on the south lode, was worth 10*l.* per fathom; an improvement in this end was expected shortly, the winze under the 170 being 4 fms. in advance of this end, and worth 25*l.* per fathom. They have been obliged to suspend this winze for the present, on account of water, but would be able to resume sinking it shortly. The 140, east of Palmer's, on north lode, was worth 12*l.* per fathom, and was only a few fathoms short of the cross-course, near which an improvement might reasonably be expected. In the 150 cross cut, north of Pryce's, they had intersected a large lode in the cross-course, but had not yet opened on it; so far as seen it was worth about 12*l.* per fathom. This was probably the lode intersected a few months since in the 160 cross cut, north of Palmer's shaft. In the 60 cross cut, north of Palmer's, they had been driving through lodey stuff for the last 12 feet, interspersed with branches containing tin and good stones of copper ores; this cross-cut was being driven in entirely unexplored ground, and the granite being of a very favourable character, a good lode might be intersected at any time. If the adventurers desired it, during the present great depression in the tin market some of the unproductive points in the mine might be suspended for the time, by which a saving of about 100*l.* per month would be effected. The continuance of the cross-cut north was, however, strongly recommended.

In answer to a question from one of the shareholders, the manager said the mine had yielded fully up to their expectation, and if the prices of minerals had kept up they would have shown a profit of at least 1000*l.* per month. Mr. Harris proposed that the accounts and agents' report should be received and adopted, and this was carried unanimously. One of the shareholders enquired if any reduction could be made in the agents' salaries, but it was shown, in answer to an enquiry from Mr. Harris, that the managers and pursers of some of the neighbouring mines were paid much higher than at South Crofty, and the matter dropped.

It was decided to limit some of the operations for a time, at the discretion of the manager.

CALDBECK FELLS (CONSOLIDATED) LEAD AND COPPER MINING COMPANY.

The half-yearly meeting of shareholders will be held at the offices of the company, Carlisle, this day, when the following report from the directors will be read:—

In again presenting a report of another half-year's work, your directors regret that they cannot congratulate the shareholders upon a more prosperous condition of their affairs, for the accompanying accounts show a loss of 657*l.* 17s. 11d. on the half-year's working. Whilst this is true, they wish to draw your attention to the fact that they have not been enabled to sell so much ore as they would have done could they have obtained a sufficient staff of men to employ on tribute work, in consequence of the continued high prices given in the coal and iron mines, thus rendering it impossible for lead and copper mines to compete with them; also that during the half-year just closed the lead ore has been of a higher quality than that sold during the previous half-year, yet the average price per ton has been less, showing a falling off in the market value of the ore, and, consequently, a loss to the company. Whilst the total value of ore raised during last half year is only 173*l.* less than the previous half-year, the expenditure has been reduced by 1112*l.*, or, in other words, nearly as much ore has been raised at a reduced expenditure of nearly 200*l.* per month. Your directors have to regret that the shareholders have not supported them as they confidently expected in the subscription for the 10,000*l.* debenture stock, for the purpose of sinking to deeper strata. The amount already subscribed for that purpose (including the 2000*l.* two of your directors agreed to take up) being 5965*l.*, which with 378*l.* of preference share capital unconverted amounts to 6343*l.*, leaving a balance of 3657*l.* Your directors did hope that after the shareholders had expressed themselves so decidedly in favour of the debenture stock in lieu of pre ference shares, they would have responded more cheerfully than they have done, but as the stock was issued on the understanding that no part of it should be called up unless the whole were subscribed, your directors now leave the matter in the hands of the shareholders to decide what shall be done. The retiring directors are Messrs. William Cowan, LL.D., and William Mulcaster, who being eligible, offer themselves for re-election. Mr. Alexander Brogden, M.P., William Banks, and Robert Tiffen, M.D., having accepted seats at the board, their election will require confirmation. Mr. Irving is eligible for re election as auditor.

Mr. Philip Hawke, the manager, and Mr. Richard Trevarthen, sub-manager, in their report say—"We advocated, from our first acquaintance with this mining property, depth, and there is no other method, as an equivalent, in order to realise its great mineral wealth but a spirited development below the present workings, and again earnestly recommend you to adopt this course in the further prosecution of the mine, upon which success wholly depends. Reviewing the whole of the shallow workings in the mine above the deep adit, we have arrived at the conviction that there is little or no prospect of profitable workings, but the indications at all points below the deep adit are irresistibly conclusive that the Caldbeck Fells Mine will ultimately be productive of mineral of immense extent and value. Our estimate for the completion of the engine-shaft to the great south lode is 7342*l.* 15s. 6d. Our estimate likewise for the completion of the proposed new shaft to the junction of the newly-discovered—the Silver Gill, Dobson Great Copper, the North, and the Great South—lodes is 3833*l.* 16s. Our figures show a difference of expenditure in the two schemes of 3508*l.* 19s. 6d."

THE LITTLEDEAN WOODSIDE COAL COMPANY.

The quarterly general meeting of shareholders was held at the Town Hall, Cinderford, on Wednesday,

Mr. EDWIN CRAWSHAY in the chair.

Mr. JAMES M. JOHNS (the secretary) having read the notice convening the meeting, the Chairman produced the directors' and engineer's reports, which were adopted. The statement of accounts for the last quarter showing a profit of 740*l.* 18s. was then read, out of which it was resolved to pay a dividend at the rate of 10 per cent. per annum, carrying forward a balance of 228*l.* 8s. to the next quarter's account. It was resolved that the unissued shares be offered to the present shareholders at 1*l.* premium, application for the same to be made to the secretary within 14 days.

A special meeting was then held, when it was resolved, on the recommendation of the directors, that the adjoining properties belonging to Mr. Peter Constance, consisting of freehold property (now rented at over 200*l.* per annum), together with coal gales, clay leases (as held from the Crown), railway siding, &c., be purchased for 4000*l.* in cash, and 200 fully paid shares in the above company."

A vote of thanks to the Chairman, proposed by Mr. W. S. WOODS, seconded by Mr. W. CORDWIN, brought the meeting to a close.

DIRECTORS' AND ENGINEER'S REPORTS.

The workings of the level for the last quarter have been most satisfactory, 3300 tons of coal having been raised, and during the present quarter the quantity will be increased. Both engines have been started. The winding-engine is fully up to its work, and capable of drawing over 300 tons a day. The pumping-engine, though having stood for 20 years, was found to be in good working order, and has since drained the mine. The men are now clearing up the road, and we find that a communication for air exists between the pit and level, proving of great advantage in opening the pit, and showing that there cannot be much obstruction. We fully expect to obtain coal next month.

THE MWYNDY IRON ORE COMPANY.

The annual general meeting of shareholders was held at the company's offices, Queen-street-place, on Wednesday,

Mr. ALEXANDER BROGDEN, M.P., in the chair.

Mr. ALEX. THOMSON (the secretary) read the notice convening the meeting, and the reports of the directors and managers, and statement of accounts, were submitted.

The CHAIRMAN said that in presenting the report he did so with great pleasure, because it was the best report which they had presented since he had been connected with the company. In these times they should expect good results; they had been persevering for years paying off encumbrances and obligations, and at the present time the company was in a strong financial position, and the result of their working had been highly satisfactory. Last year they had at the credit of revenue account 10,519*l.* 2s. 1d., and this year the amount was 18,175*l.* 9s. 5d. That had arisen partly from increased quantities, but to a small extent only; the increase was mainly due to the improved prices they had obtained, which averaged 13s. 8·67d. last year, and 17s. 1d. nearly per ton this year. He might add that the prospects for the next six months were quite as encouraging, and unless something quite unforeseen happened, this year would show as good a result. They would notice a rise in the expenditure upon stable account, which was 942*l.* last year, and 1410*l.* 16s. 2d. this year. They had had to purchase two horses, to replace those which had been worn out, which would account for the sum of 100*l.*, and then the farm had not produced so well as on former occasions. The last season had been a very bad one in the district for various kinds of crops. As to the future prospects he would refer them to the report of Mr. Vivian, which was already in their hands; it would give them quite as much information as he could furnish them. They had expended 744*l.* 17s. 6d. on the Treeastle property, and they thought the expenditure would produce a satisfactory result hereafter. By the use of the diamond rock-borer they had bored through 18 ft. of good ore in one spot, and the searches would be resumed in the spring. The mine was altogether in good condition, and the prospect of openings for ore were as good as they had been at their best times. As to what they proposed to do with the balance of the revenue account, he might remark that they recommended that 4000*l.* be applied to the redemption of debentures due on Jan. 1, 1874, which would leave the company with only 4500*l.* of debt; this was secured by a mortgage on a certain part of the company's freehold property. Of the remainder they proposed a dividend of 4s., making, with the interim dividend of 1s. 6d., a total of 5s. 6d. per share for 1873, leaving 2575*l.* 9s. 5d. to carry forward. They had also been supported by the shareholders in making the company occupy a sound financial position, and the course now recommended was following out the same view. During last year they spent much in changing the trucks from the broad-gauge to the narrow-gauge, and he believed that each year they were acquiring a sounder position. He concluded by moving the reception and adoption of the report and accounts.

Capt. R. W. PELLY, R.N., seconded the resolution, which was put to the meeting and carried unanimously.

It was then proposed by the CHAIRMAN, and seconded by Mr. R. TAYLOR, that a dividend of 4s., making with the interim dividend already declared 5s. 6d. per share for 1873, be declared.

The CHAIRMAN, in reply to a shareholder, stated that the debentures carried 6 per cent. interest, and that the 4500*l.* was secured by an ordinary mortgage at 5 per cent., subject to 6 months notice.

A SHAREHOLDER enquired whether there was a prospect of continuing the same output?——Mr. R. TAYLOR said that for the next year they might expect to do as much as this, which was all he could safely say. In future there could be no doubt that they would be able to raise large quantities, but the exact quantity would depend upon future discoveries. Hitherto their discoveries had kept pace with their output, and there was every prospect of continuance.

The dividend was then agreed to, Messrs. Fry and Taylor were re-elected directors, and Mr. Scott was re-appointed auditor, the proceeding terminating with the usual complimentary votes.

MOLD-ARGOED COLLIERY COMPANY.

An extraordinary general meeting was held at the company's offices, Fenchurch-street, on Monday, for the purpose of confirming the special resolution unanimously passed on the 2d inst., authorising the increase of the capital of the company to 35,000*l.*, by the issue of 2000 new ordinary shares of 5*l.* each, to be first offered *pro rata* to existing shareholders at par,

Mr. FRANCIS BENNOCH in the chair.

The CHAIRMAN, in moving the confirmatory resolution, alluded to the encouraging state of the company's affairs, and stated that the coal sales for the month of January exceeded by 500 those of any previous month, that the Main coal was turning out remarkably well, and that the directors were sanguine of this year doubling the dividend just declared, of 10 per cent. on the operations of 1873.

The motion was seconded by Mr. T. W. CARR, and carried unanimously.

It was understood that a large proportion of the new capital has already been subscribed by existing shareholders.

The proceedings terminated with a vote of thanks to the Chairman.

[For remainder of Meetings see to-day's Journal.]

MINING IN AUSTRALASIA—MONTHLY SUMMARY.

Adelaide, Dec. 31.—The Share Market throughout the month has been exceedingly dull, and quotations difficult to make. Good dividend paying stocks are likely to come into demand again after the turn of the year. Burra Burra (last sales), 7*l.*; Moontas (cum div.), 20*l.* 17s. 6d. to 21*l.*; Paramatta, 12*l.* to 12*l.* 5s.; Yelta, 12*l.* to 12*l.* 10s. The Moonta mines have declared a dividend of 10s. per share, amounting to 16,000*l.*, making a grand aggregate of 840,000*l.* paid out of the profits of the mine. The Wallaroo Mining and Smelting Company have also declared a dividend of 100*l.* per share, aggregating 20,000*l.* The rainy season has put a stop to most operations in the Northern Territory, and the conviction is fast gaining ground that coolie or Chinese labourers only are capable of sustained exertion in that climate. The first crushing in bulk has given the satisfactory return of some 3½ ozs. to the ton, and all reliable opinions concur in pronouncing the Territory one of the richest reefing countries in Australia.—FREDK. WRIGHT, Gresham Chambers.

Sydney, Dec. 26.—Queensland is making some rapid strides onwards. Manufactures of various kinds are increasing, and mining is being prosecuted with considerable energy. In the 14 years of her independent existence (for it is that time since her severance from New South Wales) her population has increased from 45,077 to 123,553; her area, leased in acres, from 57,200,000 to 123,737,093; her horses, from 36,532 to 92,798; horned cattle, from 647,299 to 1,200,992; sheep, from 4,523,353 to 6,687,907; gold sent by escort (value), from *nil* to 592,993*l.*; copper ore raised (value), from *nil* to 196,000*l.*; shipping inwards (tonnage), from 77,312 to 148,330; wool exported, from 8,063,613 lb. to 17,795,393 lb.; tallow, from 1503 tons to 2880 tons; cotton, from 14,344 lb. to 1,488,987 lb.; preserved and fresh meat, from 510*l.* to 62,625*l.*; imports (total value), from 1,325,509*l.* to 2,218,717*l.*; exports (total value), from 707,236*l.* to 2,698,934*l.*; revenue, from 295,286*l.* to 993,323*l.*; expenditure, from 317,026*l.* to 865,713*l.* Cotton appears to be yielding to sugar, of which the London buyers have already spoken with much favour. In this list I am surprised to see no place accorded to tin, and yet this mineral is reaching us in large quantities from the extensive tin tracts. The produce of tin by this colony and Queensland is likely to have a very sensible effect on the Cornish mines, as I ventured to suppose some time ago it would, seeing how slight were the expenses incurred here in procuring stream tin of high quality. The warning was ridiculed in England, but I perceive now that a great many of the Cornish mines, finding it impossible to stand the competition, are obliged to close. Instead of regarding the circumstance angrily, it will be the part of good sense to shift capital to the colonies and work here.

AUSTRALIAN MINES.

BREMER.—By advices just received the directors learn that the prospects of the mine are very satisfactory, more so than they have been since operations were commenced by the company, as in the 103 south there was good ore yielding 5 or 6 tons per fathom, and of better quality. The improvement is of great importance, and justifies the expectation that it will yield the same as the rich bunches in the levels above, running from the 103 to the 53 fm. levels.

PORT PHILLIP AND COLONIAL (Gold).—Dec. 27: The quantity of quartz crushed during the month ending Dec. 3 was 4674 tons; pyrites treated, 27 tons; total gold obtained, 1207 ozs. 2 cwt., or an average of 5 cwt. 4 grs. per ton. The receipts were 4625*l.* 7s. 3d.; payments (including 1062*l.* paid on account of firewood and timber contracts) 4224*l.* 15s. 3d.; profit, 400*l.* 12s., to which was added last month's balance of 1400*l.* 7s. 11d., making a total of 1800*l.* 19s. 11d., which was carried forward to next month's account. During the two weeks ending Dec. 17, the quantity of quartz crushed was 2383 tons; total gold obtained, 584 ozs. 16 cwt., or an average per ton of 4 cwt. 22 grs.

AUSTRALIAN CENTRAL.—Mr. Gill, Fryerstown, Jan. 1: My report, No. 1, forwarded by last December mail, made you aware of the position of affairs, *re* the Central Mine, on my arrival in the colony. On the completion of repairs to the winding engine I was enabled thoroughly to inspect the underground workings, and am pleased to state that, with the exception of cleaning out and partially re-timbering the southern end of the main gutter drive for a distance of 100 ft., I found everything in good order. I leave now completed all necessary repairs to both underground workings and the machinery, and the mine is now in first-rate order, and ready for work. My future plan of operation (as soon as I have sufficient funds at my disposal) will be to extend the main gutter drive to the southern boundary, about 60 or 70 ft., and put in two lateral drives across the gutter to open up the ground. On completion of these drives the mine will then be ready for straightforward blocking for the whole length of the main gutter within the company's boundaries—a presumed length of about 1800 ft., with an average width of 100 ft. I have had the gutter tested in various places for about 600 ft. in length, and the results are very satisfactory; so much so that I am now really sanguine that the mine will pay good and continuous profits from the commencement of blocking operations. The main and lateral drives will take about six weeks to complete, and will necessitate an expenditure of about 300*l.* in excess of the gold taken out during the time they are being carried on: it is, therefore, my intention, if I am not in receipt of sufficient funds on the arrival of the next mail, to wire to you in London for a return wire credit for 500*l.* to enable me to start work at once, as I am desirous of utilising the present outlay for pumping, which, though now paid by the bank, will ultimately fall upon the present company. I had an interview with the manager of the bank on Tuesday last. There will be no difficulty in obtaining possession of the Central property upon liquidation of the balance of the bank debts by the Australian United Company. I propose purchasing, as soon as the company's funds admit, a new horizontal engine for winding purposes, to repair the present portable engine, which is not heavy enough for its work. In doing so I estimate I shall save from 400*l.* to 500*l.* a year in wages, firewood, &c., working both engines from the same boiler. Should the winding-engine at any time give way all underground work (except pumping) must stop. The cost of erection and purchase of the engine I require will, I think, not exceed 400*l.*; a part of this outlay will be covered by the sale of the old one. An Act for the better working of mines comes into force to-day, and will compel me to make some surface additions entailing some outlay. The Act does not meet with general approval among the mining community, and, I think, will be allowed to die a natural death. I shall take no notice of it until compelled to do so. I sincerely trust that some effort will be made on the part of the Australian United Gold Mining Company (Limited), to pay in part, at least, the outside creditors, especially to working miners, otherwise confidence will be shaken. Hence my request to be well supplied with funds at starting to meet that emergency. I think I may add that, if the result of the first four weeks' blocking be satisfactory, a steady average and continuous profit may be calculated on till the mine is worked out: the ground tested, main gutter, being apparently of the same intrinsic value throughout, with the chance of finding some more rich tributaries to the north of the ground. Capt Anguin's report is not to hand to date; it is, however, immaterial."

SCOTTISH-AUSTRALIAN.—The directors have advices from Sydney, dated Dec. 29, with reports from the Lambton Colliery to Dec. 23. The sales of coal for the month of November amounted to 12,642 tons. The returns for the month of December were not made up when the mail left Sydney, but the manager reports that he expected the sales, like those of the previous month, to be moderate. The miners at Cadia were continuing their operations, and, from the date of the last report, when 76 ozs. of gold had been raised, they had up to Dec. 19 increased the quantity altogether to 148 ozs.

ANGLO-AUSTRALIAN.—Capt. Raisbeck, Jan. 1: Since the 3rd ult. we have not done much prospecting in the mine. We have repaired drives in the western shaft, and driven 6 ft. west on the same leader as the tributers in the prospecting shaft, and will continue to drive, as opportunity occurs, to ascertain if there is payable stone to the west.—Tributers: Prospecting shaft has been driven to their boundary on the south. Gold is visible in the stopes on the boundary. They have extended their north drive to 52 ft.; the stone is not looking so well, but is payable. They are driving east to ascertain the value of the stone in that direction. They have crushed for the month 65 tons, with a result of 33 ozs. 10 dwts. gold. The tributers in Smithy shaft crushed 20 tons for 2 ozs. 12 dwts. of gold.

BREAKFAST—EPPS'S COCOA—GRATEFUL AND COMFORTING.—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills."—*Civil Service Gazette.* Made simply with boiling water or milk. Each packet is labelled—"JAMES EPPS and Co., Homœopathic Chemists, London."

MANUFACTURE OF COCOA.—"We will now give an account of the process adopted by Messrs. James Epps and Co., manufacturers of dietetic articles, at their works in the Euston-road, London."—See article in *Cassell's Household Guide.*

Lectures at the Royal School of Mines.

ON METALS.

The fifth lecture of the course was delivered by Dr. PERCY, F.R.S., as follows:—I have a few more words to say in concluding the process of extracting zinc from its ores. After the reduction is completed the metal is obtained in pieces of about 2 or 3 lbs. each; these are re-melted in a large vessel, the surface oxide skimmed off, and the molten metal cast in ingot moulds. In these furnaces you require about 6 tons of coal for 1 ton of zinc extracted. There is another method, founded on similar principles, but conducted with apparatus differing in form from that I have described; it is termed the Silesian process. If we melt zinc in iron vessels, and keep the two metals in contact even for a short period only, the zinc always becomes contaminated with iron. It is, therefore, essential in re-melting and casting zinc to avoid as much as possible the use of iron vessels. Common zinc, or spelter of commerce, is apt to be contaminated with iron—in fact, I may say that all specimens of commercial zinc contain some of that metal. I will give you a means of detecting the iron in the zinc if it be present in sufficient quantity. Take the piece of spelter and break it across, and if, on looking closely at the fracture, you detect grey spots on the bright surfaces of the grains you may be sure that iron is present. This iron is injurious, for if you attempt to roll the metal out into sheets it becomes hard, and is liable to crack. The less iron you have in zinc the better. I have seen in some London works specimens of zinc containing only 1½ per cent. of iron cast aside as unfit for rolling. A few words about "galvanised iron"—that is, iron coated with a thin film of zinc to prevent the iron from rusting. A large quantity of zinc is melted—may be in an iron pot. The zinc when molten is covered with sal-ammoniac to prevent its oxydising, and the iron to be coated, after having its surface thoroughly cleaned, is passed slowly through the molten metal. In this process there forms in course of time an alloy of zinc and iron, which sinks to the bottom of the vessels, and is fished out from time to time. This alloy contains a large percentage of zinc—say, 90 per cent.—and sometimes occurs well crystallised. In many cases the zinc is extracted by distilling it in the retorts, as with the oxide of zinc, the iron remaining in the retorts; but a short time ago, when I was at some of these works in Lancashire, I was surprised to find that this stuff was cast into ingots, and exported to India. What the Hindoos do with it I cannot tell. We are apt to look upon this galvanising of iron as a modern invention, but it is nothing of the sort. In an old book on chemistry, Bishop Watson's Chemistry, in five volumes, published about 1780, the whole process is recorded perfectly, and stated nearly as we do it at the present day. The process was of French origin, and was practised so long ago as 1740.

Zinc and lead when mixed together at the temperature of melted zinc, if allowed to cool slowly, nearly the whole of the lead will sink to the bottom; the zinc, however, retaining a little of the lead, and the lead a little of the zinc, but merely mechanically mixed. You cannot, thus, alloy these two metals together in the proper sense of the term. Lead is commonly present in commercial zinc, and sometimes it causes inconvenience in the rolling of the zinc. Here is an alloy of equal parts of tin and zinc, and it is curious in this respect that although it contains so large a proportion of tin, it retains so much the appearance of zinc that you might readily mistake it for that metal.

We now come to Brass. What is brass? It is perhaps not so easy to answer that question. I think we shall be justified in restricting the term brass to alloys of zinc and copper only. Antiquarians and collectors of coins frequently apply the term brass to what we should call bronze, or gun metal, an alloy of copper and tin, and this causes much confusion. It is curious to find more than 2000 years ago, in the writing of Pliny, that the same confusion existed. Now, for example, we have pinchbeck metal, Dutch metal, Prince's metal, &c., worse than all we sometimes find different terms applied to the same kind of brass. The old term for brass was *latten*, as we find in ancient records, and the modern French name is *laiton*. Brass was known certainly 2000 years ago in the days of Pliny; for he tells us there was a kind of metal known as *ori chalcum*, which means mountain brass, and it is said to have been very much like gold in appearance. But I think there can be no doubt that the term refers to our brass, inasmuch as no one would mistake gun metal for gold—its colour is quite different. With regard to the common properties of brass, it has many advantages over copper, it is harder, and will, therefore, better resist wear from friction. It is a very workable metal, can be cast perfectly, it is very malleable and ductile, can be rolled out, and then beaten out (at all events when it has a certain composition)—Dutch metal for instance, can be drawn out into fine wire, raised up by stamping. It is agreeable to look at, and much cheaper than copper. When I speak of ordinary brass, without any qualification, I shall mean brass which has a composition in round numbers of two parts of copper to one of zinc. I shall describe the ancient process of manufacturing brass, which has now, however, been generally abandoned, and I do not think there is one furnace, conducted on this process, now in this country, though I saw several in full working order in Birmingham about 30 years ago. The oxide of zinc was in all cases used, and this was mostly obtained by roasting calamine, or carbonate of zinc, hence the name of calamine brass. You will remember that zinc is obtained from this oxide by heating it with carbonaceous matter in a closed vessel. Now, to make zinc we should take some of this oxide, mix it well with charcoal powder, and add a quantity—in proper proportion—of granulated copper; the mixture is then put into large crucibles and heated strongly for several hours. The zinc vapour thus separated finds itself largely in contact with metallic copper throughout the mass; it continues with the copper and forms brass. The point to be attended to is not to raise the temperature so high as to melt the copper, or that metal would form a layer at the bottom of the crucible, and our object is to keep the copper as much as possible in contact with the zinc. The furnace used is very simply constructed, merely consisting of an oven-shaped building of fire-brick; there are no bars, but a plate of iron (protected with fire-clay) pierced with holes for admission of air, and other larger holes (one in the centre, and seven or eight at equal distances round the plate), in which the crucibles are set. In the top of the furnace is inserted a cast-iron collar, and over that place a cover of cast-iron, which serves as a damper to regulate the temperature; there is no chimney. There are several of these furnaces built in a row, and enclosing them all is built a large kiln, like those we see in modern glass-houses. The furnaces are built nearly on a level with the ground, but there is an underground passage to each of them for the removal of ashes, &c. When the furnace is in working order the charge is introduced into the crucibles, and they are put in their places; the fuel is introduced gradually, and worked down and between the pots, the object being to keep up a uniform temperature. After a lapse of several hours the furnace will have done its work. We then take out the central pot, and shake it well to get the molten metal to the bottom; it occupies but a small space compared with that occupied by the charge. Each of the other pots are taken in succession, and after shaking, the contents are emptied into the centre pot, and by this means we get at the end of the process, a crucible full of brass which is then cast into ingot moulds, which in former times were made of stone. This calamine brass had a great reputation, it was in high repute for buttons, for wire drawing, and especially for wire intended for paper-marker's gauze. I do not see why this brass should be so much better than that made from good copper and zinc in modern times, and I do not think it was. A few days ago we submitted to a vigorous analysis a specimen of this brass, which I obtained some years ago from Birmingham, and it showed—

Copper	60·67	Iron	0·77
Zinc	34·23	Nickel, cobalt	Traces
Lead	3·81		
Tin	0·17	Total	99·45

The most remarkable feature is the large percentage of lead; as a rule, I may say the more free the brass is from lead the better it is. The brass is now made by adding spelter to the copper, previously heated to a certain degree. It is made on a very large scale in reverberatory furnaces, and there is some loss due to the volatilisation of the zinc. Here is a simple experiment: let anyone take one of the old pennies, or a piece of copper, take a crucible, and put a small piece of spelter at the bottom, then on that some charcoal or fire-brick, then the disk of copper, and cover all with charcoal; heat strongly, but not too high; a coating of brass will be formed on the copper penetrating deeper the longer the process is continued; some of the Nuremberg brass is supposed to have been produced by a process of this kind.

Among the varieties of brass is one known as Muntz's metal, intended for sheating ships. This metal, now so largely employed, is nothing more than brass, consisting of 38 per cent. by weight of spelter, and 62 per cent. of copper. The late Mr. Muntz took out a patent for it, and recommended the proportions of the metals to be used as 40 and 60, but it has been found that they are not the best proportions; it is better not to have so much spelter, as the metal is then not so liable to become crumbly. It can be rolled at a red heat, but if cooled down to a certain degree it is no longer capable of being rolled; cooled still lower, it again becomes malleable. Here is a curious fact about it; a patent was granted to Mr. Collins in 1821 nearly identical with that granted to Muntz; it was the same thing, recommended in nearly the same proportions for the same purposes, and stated to possess the same qualities. I do not now wish to get into any argument about patents, but I do say that while in the records of the Patent Office such a patent as that of Collins was written, although it might never have been brought into practice; still another patent, to all intents and purposes identical, ought not to have been granted. To show the varieties of composition in brass, here are the results of analyses of several specimens of commercial brass obtained for me by a friend; the percentage of copper in them being—No. 1, 59·59; No. 2, 63·22; No. 3, 91·44; No. 4, 71·2; No. 5, 64·85; No. 8, 75; No. 9, 72·64. If we take copper and zinc in inverse proportion—two of zinc to one of copper—we shall get a metal totally unlike zinc, very brittle, white, and quite valueless. Some time ago there was a question about cleaning some of the metal statues in Westminster Abbey, and I recommended it should be done with ammonia, something which would not corrode the metal. I thought the metal might be brass, but I found I was mistaken; here is the exact composition of the metal, the result of an analysis which has not yet been published—

Copper	83·3	Lead	0·17
Tin	1·52	Iron	0·53
Zinc	14·47	Sulphur, silver, gold	Traces.

It is substantially a brass rich in copper, the gold is probably derived from the gilding, the gilding being attached in the manner technically known as water gilding.

Another variety of brass is Dutch metal, which contains a very large percentage of copper; it is rolled out into thin leaf, then beaten out, so as to reduce it to somewhere about 1-32,000 of an inch. Then we have what are known as brass foils, sometimes most beautiful things; it requires a first-rate quality of brass, containing a good deal of copper to be able to be rolled out thin. Jewellers sometimes employ them, I think I may say not unfrequently. A very short time ago a lady showed me what she thought was a very fine amethyst, but I soon saw that it was only quartz with a piece of foil at the back. And those cheap chains too which we see so commonly now have a core consisting of brass and gold, about eight parts of gold with a gilding of a thin film of gold. They are made by machinery, and are apt to become brittle in the course of wear.

In the ordinary process of pressing or stamping brass, as in making curtain rings, you cannot raise the surface by one blow, it requires a succession of blows. This, however, would make it brittle if it were not prevented by annealing the metal from time to time. In the process of annealing it becomes coated with a black scale which can be detached by means of aquafortis. The process of "dead dipping," to obtain a dull surface, is conducted by dipping the annealed metal into aquafortis (one part of aquafortis to four of water) till the black scale rubs off easily; then after washing in water it is dipped into acid of double the strength; this acid will attack the metal and form a green layer on the surface which really consists of bubbles of gas. When it is well coated it is taken out and washed and rubbed with cold saw-dust, and without removing the adhering saw-dust is plunged into the strongest acid. It is taken out of this almost immediately, and washed in water containing cream of tartar dissolved in it, and lastly it is placed in hot saw-dust.

FOREIGN MINING AND METALLURGY.

Copper has continued in rather a languishing state at Paris, and prices have declined 1*l.* per ton. Chilian in bars, delivered at Havre, has made 86*l.* per ton; ditto in ingots, 91*l.* per ton; tough English, 90*l.* per ton; and Corocoro minerals, 89*l.* per ton. The Marseilles copper market has presented scarcely any change. The German copper markets have been generally feeble. At Paris, Banca tin, delivered at Havre or Paris, has been quoted at 124*l.* per ton; Straits ditto at 122*l.* per ton; and English, delivered at Havre or Rouen, 120*l.* per ton. Tin has experienced a sharp fall at Rotterdam. Banca has fallen in succession from 68 fl. to 65 fl. Upon the German tin markets there has been a comparative absence of business, and prices have been nominal. At Paris, French lead, delivered at Paris, has brought 23*l.* 12*s.*; and Spanish, delivered at Havre, 23*l.* 4*s.* per ton. Stolberg lead has made 14¼ fl. at Amsterdam. Quotations for zinc have been reduced 16*s.* to 1*l.* per ton at Paris, but the reduction has not brought with it much improvement in business. Silesian, delivered at Havre, has made 26*l.* per ton. Zinc has shown some weakness upon the German markets.

There is comparatively little news to communicate with reference to the French coal trade. Transactions have remained quiet, prices have scarcely varied, and no interesting circumstance has occurred to disturb the general torpor. Recent cold weather has not had any effect, while the increased caution of speculators has precipitated the fall, of which it has been extremely difficult to check the continued development. The imports of coal into France last year were officially returned at 7,100,000 tons, against 8,800,000 tons in 1872, and 5,400,000 tons in 1871. In last year's imports England figured for 2,400,000 tons, Belgium for 3,900,000 tons, and Germany for 6,000,000 tons, The exports of coal from France last year were 900,000 tons, against 700,000 tons in 1872, and 500,000 tons in 1871; the totals are stated, of course, in round figures. The exports of coal from France to Italy increased from 67,900 tons in 1871 to 270,000 tons in 1873. An official paper shows that the increase in the production of coal in the departments of the Nord and the Pas-de-Calais last year, as compared with 1869, was 109 per cent.

The French iron trade is still suffering considerably, production is being more and more restricted, and the number of persons without work is increasing from day to day. Some circumstances appear to indicate that there will be a certain revival in affairs in the spring. Thus the Government is preparing to undertake some great works, and sundry railway companies have decided to terminate promptly some portions of their networks, which have fallen into arrear; the termination of the winter will also bring with it some restoration of activity in the building trade. All these circumstances combined cannot fail to exert a favourable influence on the state of affairs. In the Haute-Marne charcoal-made pig for refining is quoted at 5*l.* 16*s.* per ton; No. 1 coke-made pig for second fusion at 6*l.* 16*s.* per ton; No. 3 ditto, 5*l.* 14*s.* per ton; first-class coke-made rolled iron, 10*l.* 2*s.* per ton; sheets, coke-made, 12*l.* 4*s.* per ton; ditto, charcoal-made, 13*l.* 10*s.* per ton. In the Meurthe-et Moselle rough pig for refining has realised 3*l.* 4*s.* to 3*l.* 8*s.* per ton. In the Nord merchants' iron is quoted at about 9*l.* 12*s.* per ton, but prices are nominal. MM. Schneider and Co., of the Creusot Works, are stated to have been negociating with MM. Carrière and Co., of the Allevard Mines and Forges, with a view to a great extension of the working of some mines of spathic iron, which the management of the Allevard Forges has already turned to considerable account. It appears that the imports of pig and unworked iron into France last year amounted to 131,309 tons, against 134,303 tons in 1872. Worked iron, plates, and steel were imported to the extent of 49,466 tons, against 42,210 tons in 1872. The exports of iron of various kinds from France last year were 284,281 tons, showing a diminution of more than 20,000 tons as compared with 1872. The imports of iron minerals into France last year amounted to 720,518 tons, while the exports of iron minerals from France in the same period were 352,853 tons. Of the minerals imported into France in 1873 267,000 tons came from Algeria, 175,000 tons from Spain, 123,000 tons from Italy, and 120,000 tons came over the Belgian frontier. Of the minerals which were exported from France last year Belgium took 174,500 tons, and Germany 163,500 tons.

All reports agree upon the bad state of the iron trade in Germany, though they may differ as to the causes by which it is to be accounted for. Those in the trade who suffer most directly believe that the reason is to be found almost exclusively in the high price of coal compared with the low prices of iron. Though, however, the disproportion between two such essential and mutually dependent branches of industry cannot be denied, and though it must be admitted that the rise in the price of coal, contracted to be delivered in 1874, had an effect all the more disadvantageous, as at the time of this advance the downward movement in the prices of iron (produced by reduction of duties and the general state of affairs) had already commenced, still we believe that the high price of coal is not the only nor the principal cause of the calamity from which the iron industry is suffering at present. The fault is attributable in a far greater degree to the railways, and their keeping back of even the more necessary orders. As a glaring proof of this we give the following letter, written from Essen:—

"Whilst formerly the rails when they were worn down on one side were thrown out as unsafe, they are now, with very doubtful economy, taken up and laid down again in a reversed position. But if it is intended to compel the iron industry by such questionable means to favour the rise in the tariff, for which, as we are told by one of the higher officials, the railway authorities are striving, they forget that such a proceeding would tend to bring the railway traffic from its former state of safety, which has already been too much abandoned, to one of real danger. As to what concerns the rise in the tariff for which they are striving, we do not belong to those who oppose it on principle. If it is taken into consideration that since the existence of the present tariff coal has gone up 300 per cent., salaries 50 per cent., and that the erection of new lines is a great deal more costly now because of the higher price of land and the general rise in wages, nothing could in fairness be objected against a moderately higher tariff, due regard being had at the same time to the greatly increased traffic of our day."

The depression which has weighed upon the Belgian iron trade has not yet been removed. The cause of this state of affairs is not to be found only in the high price of coal, but it is rather attributable to the inaction of railway companies, which are endeavouring in some way or other to recoup themselves for the exaggerated working expenses which they had to sustain last year. It is by means of economies carried to their utmost possible limits that railway directors are now endeavouring to increase the amount of their profits, which are smaller than in preceding years. With this object they are keeping in use old rolling stock, however dilapidated it may be, instead of purchasing new stock. Rails are also even being turned, instead of being renewed. It may, of course, be doubted whether this parsimony will prove in the end to be real economy. Business has presented comparatively little importance upon the Belgian markets during the last few days, and quotations have been almost nominal.

There is now but little doubt that coal has experienced a reduction of some 50 per cent. in Belgium as compared with last summer. As prices are still falling the demand must be still feeble. Quotations may now be said to have returned to about the level at which they stood in November, 1871. It may be remarked that the average price current at Liége is weaker than that which has prevailed at Charleroi. It would also be observed that the lowest prices offered were submitted by an establishment which devotes itself to both coal mining and metallurgical industry. There have been rumours this week of several strikes of colliers, especially in the Liége district, in consequence of a reduction in wages. The movement does not appear, however, likely to extend. The moment seems to have been badly selected by the workmen for a strike, as colliery proprietors are seeking for pretexts in order to restrict an already superabundant production. The Monceau-Fontaine and Martinet Collieries Company will pay on March 31 a dividend of 32*l.* per share for 1873.

At a meeting of the Society for Promoting the Construction of Steam-Engines in Russia, recently held at St. Petersburg, Mr. L. E. Nobel read a paper on the gradual progress and present condition of the mechanical produce of Russia, and on the influence of Government orders on its development. It appears from Mr. Nobel's paper that the steam and other engines construction trade in Russia has been up to recent times in a very languishing condition, having been supported by Government orders only, especially those of the army and navy departments. Whatever steam-engines have been wanted for private enterprise, but especially those for railways and steamships, were almost always supplied from abroad, to the great detriment of Russian national industry. Since the introduction of railways, steam navigation, and mining works in Russia the demand for locomotive and other steam engines has become enormous. As the native factories are unable fully to supply this demand, foreigners step in and reap the benefit of Russia's negligence. But this state of things, it was urged, must not and should not continue any longer Coal and iron were in abundance, and as soon as the necessary iron-works and factories had been erected Russia would be able to make her own steam-engines as readily as any other country, and would thus become entirely independent of the produce of foreign markets in that respect. With the view of encouraging this branch of Russian trade, a special commission has been appointed by the society to enquire into the subject. The results of these investigations will be carefully considered at the next meeting of the society, and will then finally be laid before the Minister of Finance.

DIAMONDS AND GOLD IN SOUTH AFRICA.

A correspondent, writing from Kimberley (Dec. 28), says:—Before this letter can reach England you will have published some accounts of the finds of gold, so that I shall not now go much into detail. The latest news is that 13¼ lbs. were found in one hour in a single claim, the largest nugget weighing 4 lbs. This gold was brought down to Kimberley diamond fields on Christmas Day, and has excited much admiration. I know, as facts, of the following finds:—In one week a party dug out 15 ozs., next week 34 ozs.; another party 100 ozs. in four week, and so on. The present number of diggers is about 500, but fully 800 are now also on their road from Kimberly. I have private letters from "Pilgrim's Rest"—the latest rush—also of a highly satisfactory character. Now, what does all this portend? The clearest way, perhaps, will be to summarise the situation as follows:—The whole of South Africa is, at this moment, in a highly prosperous condition—money is plentiful, and speaking generally everyone is well off. Our banks, our steamship companies are flourishing, and although this may not prove to be a second Australia or California, there is a pretty firm conviction that South Africa is likely to be a very important appendage to Her Majesty's empire. Everyone is in good spirits because it is felt that at length South Africa will be better appreciated and understood at home.

Leaving the gold fields to take care of themselves, I will try and remove a few errors which still prevail at home regarding the diamond fields. The Colesberg Kopje Diamond Mine is really at this moment one of the wonders of the world; it contains, I maintain, the largest number of workers in a small space that has been seen in any modern work, and I cannot call to mind any enterprise, excepting the Egyptian Pyramids, where it can have been necessary for such a swarm of human beings to be so closely herded together. Can any of your correspondents cite a few instances? The Kopje is not now so busy as it was some time ago—I will say in October, 1872—when there cannot have been less than 20,000 men employed in a space occupied by 2500 claims of 30 ft. square each. The actual present value of the mine is estimated at 1,000,000*l.*; three months ago it was valued at 2,000,000*l.*, but claims have fallen 60 per cent. It is proposed to spend 60,000*l.* immediaiely in rendering the mine safe by removing the outside dangerous reef. Some of the claims are 130 ft. deep, and the whole mine, resembling a vast basin, is being emptied by means of the wire-rope tramway system, which has cost an enormous sum in erecting. This can easily be imagined when it is known that every pound weight of wire, every pound weight of deal wood and timber, has cost from 4d. to 6d. per lb. for transport alone. Diamond diggers are not now particularly gay—the diamond market is down; but why it should be so persistently affirmed in England that South African diamonds are not good—that they are only "Cape"—I cannot conceive. The Cape diamonds are fully as good as any others, the only difficulty being that the

bulk are often light yellow, or "off-colour" description, and very handsome ornaments they make. Great numbers of the original claimholders in the Colesburg Kopje Mine have made small fortunes. I know of at least 10 among my personal friends who will average 8000*l.* each, all made, it may be said, in two years, out of nothing.

SOCIETY FOR THE PROMOTION OF SCIENTIFIC INDUSTRY.

The Exhibition in Peel Park, Manchester, is now to be seen at its best. Even at a distance the building, discharging its waste steam in the air at all points like a vast kettle on the boil, seems to promise comfort and warmth. Within all is orderly bustle; the machines and the men who attend to them have settled down into their respective places, and nothing is in the way. Mr. Larkins and the council have every reason to be satisfied with the public interest in their undertaking. The show of inventions is almost equally interesting from a technical and a general point of view. Those who know something of science will find a great deal to investigate; and for those who do not there is just as much to admire. One exhibitor, as if inspired by the example of the philosopher of Laputa, cuts up the very fuel for your fire into geometrical shapes; another, who owns the patent for Leigh's phœnix fuel, has found out how to turn all the refuse of coal fires—such as ashes, dust, and bass—into a solid substance for burning, which seems to be every bit as good as Wallsend. Inventions of the kind last mentioned are very numerous. There is Radeke's patent artificial process by which large coal is manufactured from small coal by the aid of silica, both in a solution and in a powdered state. In all some binding matter is mixed up with the grains; in this the chemical employed is said to be the best for the purpose. Mr. John Pender, another competitor in this department, shows common coal and shale tar prepared, peat and shale tar, coal and peat and shale tar together, and steam coal and shale tar, all combined, with a view of making something out of what is still a mere nothing to so many wasteful manufacturers. Nature's own division of the labour of invention is well illustrated in these and similar contrivances. One man has given all his attention to the materials for a new fuel; another cares nothing for the materials, but is ready to compound them in any form desired; a third is at hand with a new stove or furnace in which the compound may be economically burnt. In these stoves and furnaces, again, the division is wellnigh infinite. Mr. W. A. Martin, of London, leaving the question of what to burn altogether aside, has thought of a furnace door, which, by subtle diversions of the currents of air, makes the most of the fuel inside, and leaves no fragment unconsumed. What is to be done with the heat thus produced? Mr. Crawshaw will tell you. You must fit one of his "household coal cavers" to the fireplace, and so catch the hot air, purify it, and turn it back into the room before it has time to escape by the chimney. Messrs. Erskine, of London, have a similar invention for use in boilers. By fixing a coil of heating pipes in the smoke box of an engine they intercept the waste heat, and turn it back again right into the water. Along with these are shown many other heat-saving inventions which, like Crawshaw's, are mainly for domestic use, such as the "London school grate and patent warm-air chamber ventilating fireplace," by Mr. Dovey, of Manchester; Corbitt's patent warming and ventilating grate; and the cooking range of Newton, Chambers, and Company, of Sheffield. Of most of these it may be enough to say that the sectional view of them is only to be equalled for complexity of detail by the works of a watch or the machinery of the human body. In Corbitt's particularly there are cold air inlets, with air chambers, and warm air outlets, which remind one of the organs of respiration. The view of the Newton-Chambers range in full operation is not unlike a two-storey house with the front taken off. The fire burns in the doorway; a piece of pork and a pie occupy the front parlour to the left, and in the right-hand parlour is seen the boiler tap. The boiling and stewing are done in a drawing-room running the whole length of the first storey; one of the upper chambers serves for the cooking of a leg of mutton, and another for the warming of the plates. The back part of the premises, though of course not visible in the drawing, is believed to be equally commodious. The point of this invention is that as much is done with one small fire as the cooks of old would have been able to do with half a dozen large ones. Messrs. Currall and Bennett's eclipse range and Badger's Worcester kitchener are other practical solutions of the same economical problem which seem to deserve the attention of householders. A gas stove, exhibited on the inventor's behalf by Mr. Wilson, King-street, will, it is stated, roast a 7-lb. joint of meat, boil the vegetables, and bake a pie at a cost in gas of a little over one penny. The insolent little Multum in Parvo stove—which, it will be remembered, professes to make the wife a superfluity in the household—may be seen any day cooking a chop, boiling a kettle, and in various other ways trying to make good its preposterous claims to the regard of "emigrants and bachelors."

The classification of objects is a very simple one. In the first-class we have appliances which may be adapted to existing furnaces for improving the combustion of fuel. To this belong the furnace-door already noticed, and a furnace front, the invention of Mr. Prideaux, author of one of Weale's scientific series—the "Economy of Fuel." Messrs. Broadbent and Hurst exhibit apparatus for preventing smoke in large or small furnaces, and for creating artificial draughts of steam and air. Several other inventors show models of fire-bars. In class 2—appliances which may be adapted to existing steam-boilers for the utilisation of waste heat—we have a great number of mechanical contrivances, which for the most part are not to be understood without acquired technical knowledge. In class 3 exhibitors have to show how to prevent the loss of heat in engines from radiation and conduction, and they appear to have tried to do this in every case by the invention of non-conducting compositions and cements. To class 4—new or improved furnaces using solid, liquid, or gaseous fuel—belong many inventions already noticed. Some, as in the smoke-consuming furnaces, stop the waste in one form; others are said to stop it in all. To exemplify the high merit claimed for some of these inventions, we may make a brief extract from a statement about the Crosland boiler:—

> This boiler is most noteworthy for its great power and economy, and is the most powerful high-pressure boiler that has yet been constructed. Two boilers, each only 4 ft. diameter and 28 ft. in length, have driven 740 i.h.-p., and supplying steam to a large mill, together making 840 i.h.-p., for a period of about 12 months; these two boilers weigh about 14 tons, whilst to do the same amount of work it would require four of any other description of boilers, weighing at the least 50 tons. Although even in Manchester and all the neighbouring towns there are numerous factories using from six to eight boilers in doing 840 i.h.-p., being 80 to 100 tons of boiler material, as against 14 tons of the new boiler.

We are not in a position to state whether this can or cannot be done, but the mere offer to do it by a respectable firm must surely be worth the attention of manufacturers. Were half the reductions in the cost of material promised in this exhibition quite feasible, we might hear less of the necessity of reducing the cost of labour. The problems offered for solution by the Council have an equal interest and importance for both capital and labour. In class 5 we have the manufactured fuels already noticed. The great majority of the inventors have made peat the basis of their experiments, and have thus turned their attention to a substance which is to be found in the United Kingdom in only less abundance than coal. In class 6—coal-cutting and peat manufacturing machines—Messrs. Winstanley and Barker exhibit a coal-cutting machine, which is said to be capable of doing in a hard seam, in an eight-hours shift, the work of more than 30 men. Messrs. Mather and Platt and Mr. J. G. Bass are other exhibitors in this department. The seventh class—for inventions for domestic use—will be of the greatest interest to the general body of visitors. To this belong the innumerable fireplaces, ranges, kitcheners, stoves, and grates for cottage and for drawing-room, of which we have already attempted to give the reader some idea. The mention of a "miscellaneous" collection must bring our brief summary of the catalogue to a close for the present.

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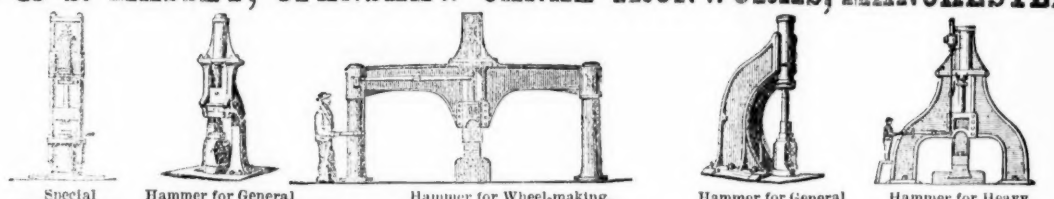

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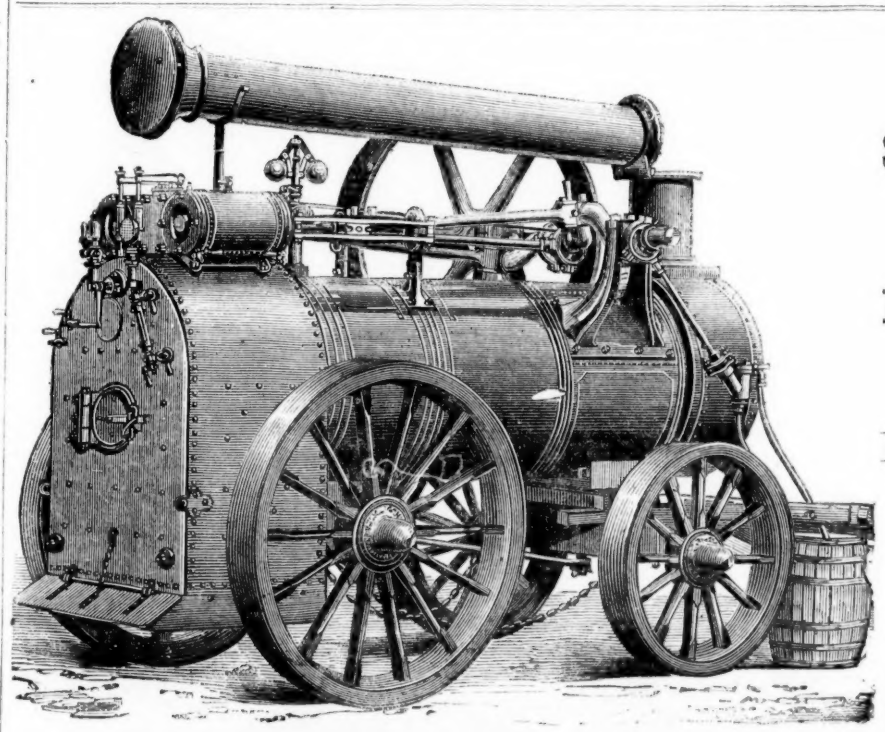

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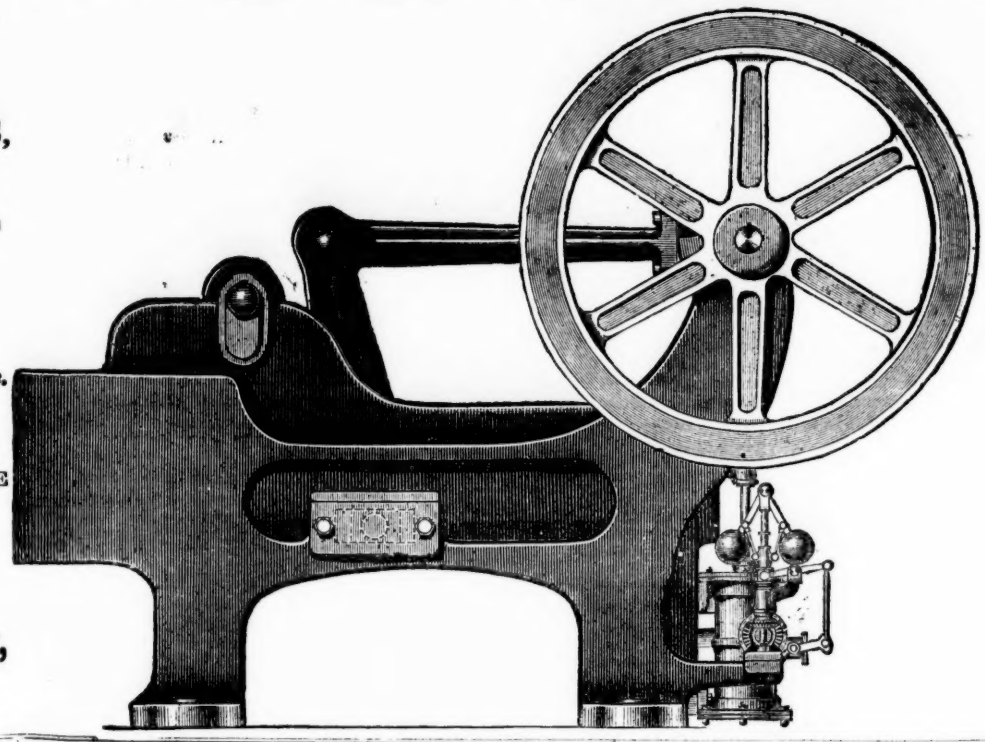

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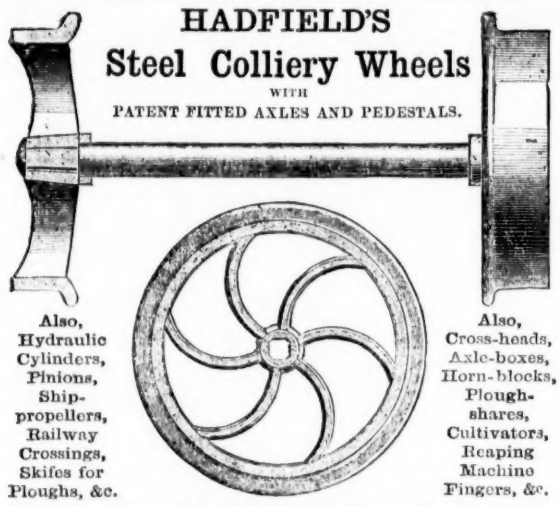

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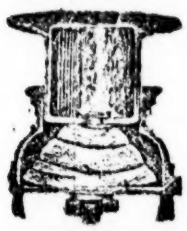

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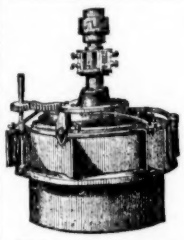

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